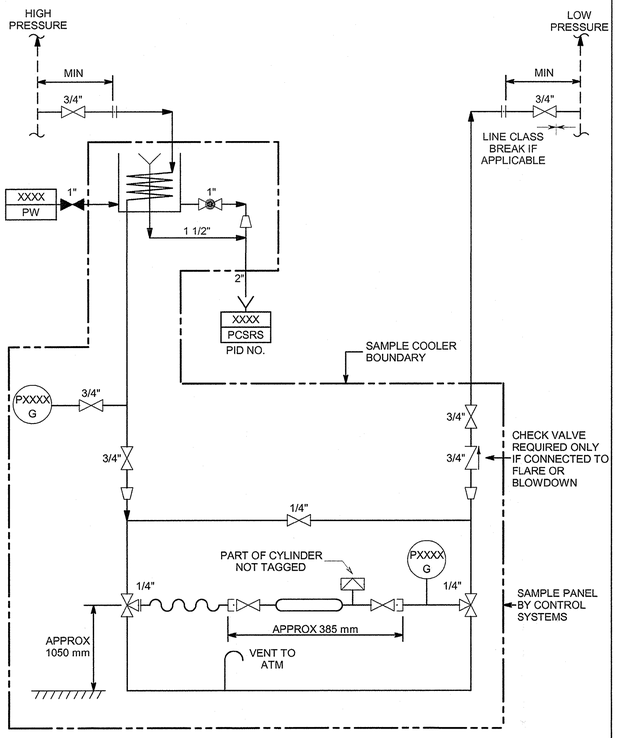
SAMPLE CONNECTION TYPE A



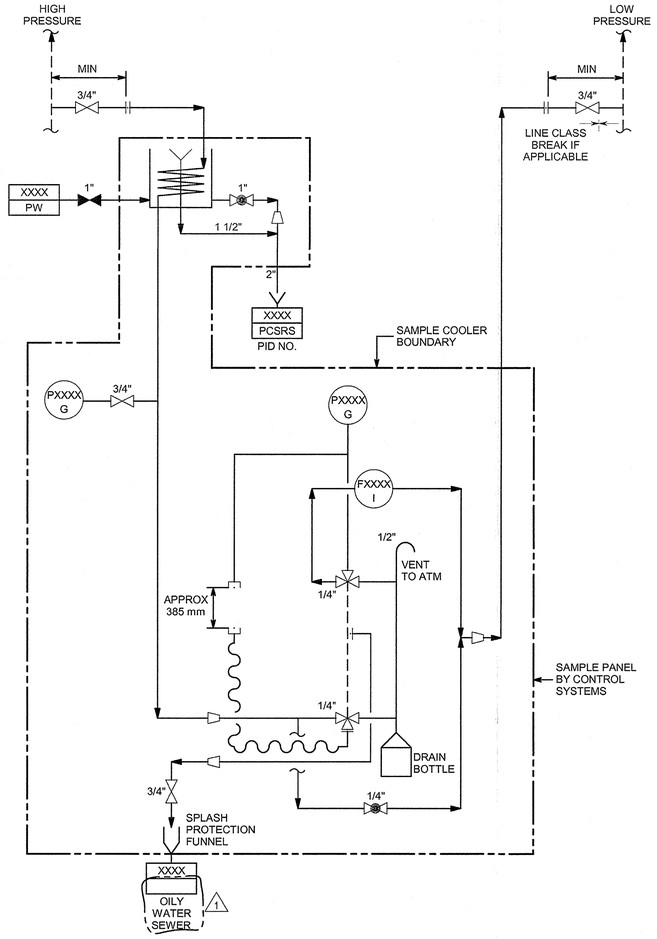
SAMPLE CONNECTION WITH LOOP FOR GASES

ABOVE 30 barg AND ABOVE 80°C FLEXIBLE TUBING TO BE REPLACED WITH PIPING. WITH APPROXIMATELY 750 mm BETWEEN SAMPLE VALVES.

COOLER REQUIRED FOR OPERATING TEMPERATURE ABOVE 65°C OR IF REQUIRED FOR OTHER PROCESS CONDITIONS.

SC TAG NUMBER	P&ID	COOLER REQ'D. (Y/N)	TAG NUMBERS PG	TAG NUMBERS PG	LINE CLASS BREAK FROM	LINE CLASS BREAK TO

SAMPLE CONNECTION TYPE B



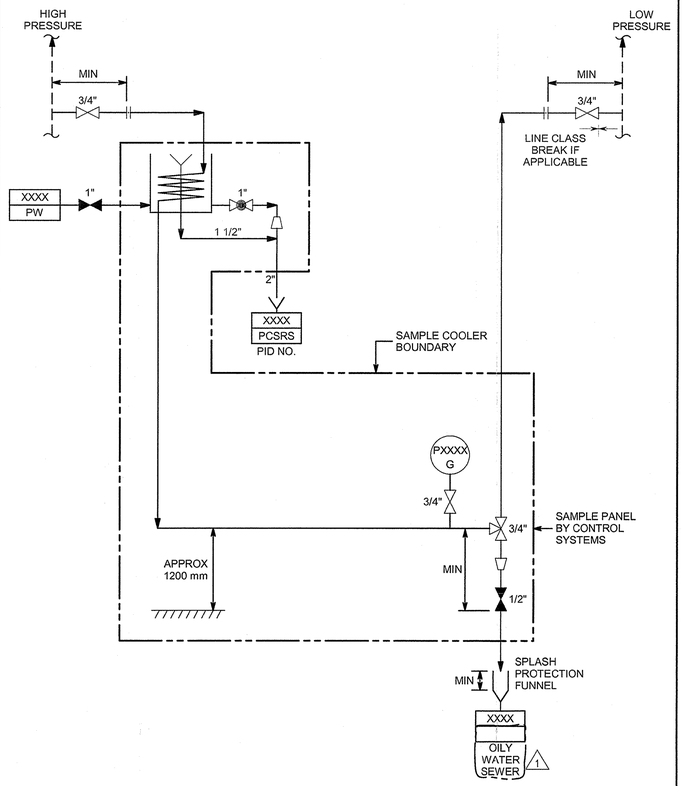
SAMPLE CONNECTION WITH LOOP FOR LIQUIDS ABOVE ATMOSPHERIC BOILING POINT OR HAZARDOUS LIQUIDS.

ABOVE 30 barg AND ABOVE 80°C FLEXIBLE TUBING TO BE REPLACED WITH PIPING. WITH APPROXIMATELY 750 mm BETWEEN SAMPLE VALVES.

COOLER REQUIRED FOR OPERATING TEMPERATURE ABOVE 65°C OR IF REQUIRED FOR OTHER PROCESS CONDITIONS.

SC TAG NUMBER	P&ID	COOLER REQ'D. (Y/N)	TAG NUMBERS INLET PG	TAG NUMBERS OUTLET PG	TAG NUMBERS FI	LINE CLASS BREAK FROM	LINE CLASS BREAK TO	LINE NUMBERS PW	LINE NUMBERS PCSRS	LINE NUMBERS O
001	ER-K-2245	N	P1004G	P1005G	F1004I	3CB2S01	AA1E			3/4"-O-EA1005-12CS1S01
002	ER-K-2245A	N	P1006G	P1007G	F1006I	NA	NA			3/4"-O-EA1006-12CS1S01
010	EZ-K-2950	N	P1006G	P1007G	F1006I	NA	NA			3/4"-O-EA1007-12CS1S01
011	ED-K-2641	Y 1	P1006G	P1007G	F1007I	NA	NA	1"-PW-EU1537-12CS1S01	2"-PCSRS-EA1001-12CS1S01	3/4"-O-EA1002-12CS1S01
012	ED-K-2680	N	P1004G	P1005G	F1009I	NA	1 NA			3/4"-O-EA1008-12CS1S01

SAMPLE CONNECTION TYPE C



SAMPLE CONNECTION WITH LOOP FOR NON-HAZARDOUS LIQUIDS BELOW ATMOSPHERIC BOILING POINT.

RETURN LOOP USED WHEN THE SAMPLED FLUID IS TO BE CONSERVED OR RECYCLED.

COOLER REQUIRED FOR OPERATING TEMPERATURE ABOVE 65°C OR IF REQUIRED FOR OTHER PROCESS CONDITIONS.

SC TAG NUMBER	P&ID	COOLER REQ'D. (Y/N)	TAG NUMBERS PG	LINE CLASS BREAK FROM	LINE CLASS BREAK TO	LINE NUMBERS PW	LINE NUMBERS PCSRS	LINE NUMBERS O
004 1	ER-K-2292	Y	P1150G	NA	NA	1"-PW-EU1540-12CS1S01	2"-PCSRS-EA1003-12CS1S01	3/4"-O-EA1004-12CS1S01

NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 2004, "PIPING AND INSTRUMENT DIAGRAM SYMBOLS AND NOMENCLATURE". FOR DEPICTION OF SAMPLE CONNECTIONS ON P&IDS, SEE 00-K-2000.
2. ALL COMPONENTS OF THE SAMPLE COOLER AND CONNECTING PIPING ARE TO HAVE THE SAME PIPE SPECS AS THE LINE SIZE BEING SAMPLED.
3. SAMPLE COOLER SHOWN IS FOR INTERMITTENT SAMPLING ONLY. COOLERS FOR CONTINUOUS ANALYZERS SHALL BE PIPED TO THE COOLING WATER SUPPLY AND RETURN.
4. GAS SAMPLES FROM HORIZONTAL LINES SHALL BE TAKEN FROM THE TOP OF THE LINE.
5. LIQUID SAMPLES WILL BE TAKEN FROM THE SIDE OR BOTTOM OF THE LINE.
6. LENGTH OF SAMPLE LINES TO SAMPLE POINTS TO BE MINIMUM.
7. SAMPLE CONNECTIONS ARE NOT TO BE INSTALLED IN DEAD LEGS.
8. TO BE INSTALLED WITH OR WITHOUT RETURN LOOP AS INDICATED ON THE P&ID.
9. ALL PIPES AND VALVE TYPES ARE TO BE PER THE APPLICABLE PIPING SPECIFICATION. USE GLOBE VALVES AS SHOWN, GATE VALVE SHOWN IS GENERIC ON-OFF VALVE.
10. SPEC BREAKS ON THE LINE INCLUDE CHANGES IN THE LINE CLASS, INSULATION AND TRACING.
11. ALL ANALYZERS WILL EITHER HAVE PROVISIONS FOR MANUAL SAMPLING INCLUDED OR A SEPARATE SAMPLE CONNECTION MUST BE ADDED TO THE LINE.
12. DELETED.

HOLDS:

8 DELETED 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

شركة الجبيل للبتروكيماويات
al jubail petrochemical co.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
SAMPLE CONNECTION DETAILS

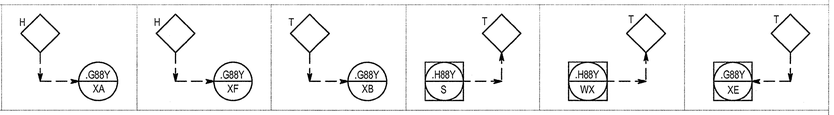
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2012	1 OF 1	1

DETAIL 1

TAGGING TABLE OF COMMON & RELATED ALARM AND SHUTDOWN FUNCTIONS 1

SYMBOLOGY

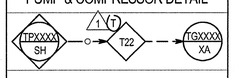


TRICONEX BASED CONSOLE PEPDM

AREA	TRICONEX SYSTEM NRS.	COMMON PRE-ALARM	COMMON SENSOR FAULT	ESD BYPASS ALARM	GROUP (SYSTEM) RESET (PERMISSIVE)	GROUP (SYSTEM) BYPASS PERMISSIVE	COMMON SHUTDOWN ALARM (PRIORITY 2)
C	C01	———	———	———	ECH0881S	———	ECG0881XE
R	R01	ERG0881XA	ERG0881XF	ERG0881XB	ERH0881S	ERH0881WX	ERG0881XE
R	R02	ERG0882XA	ERG0882XF	ERG0882XB	ERH0882S	ERH0882WX	ERG0882XE
R	R03	ERG0883XA	ERG0883XF	ERG0883XB	ERH0883S	ERH0883WX	ERG0883XE
R	R04	———	———	———	ERH0884S	———	ERG0884XE
		———	———	———	———	———	———
L	L01	———	———	———	ELH0881S	———	ELG0881XE
		———	———	———	———	———	———
T	T01	ETG0881XA	ETG0881XF	ETG0881XB	ETH0881S	ETH0881WX	ETG0881XE
		———	———	———	———	———	———
D	D01	EDG0881XA	EDG0881XF	EDG0881XB	EDH0881S	EDH0881WX	EDG0881XE
		———	———	———	———	———	———
S	S01	———	———	———	ESH0881S	———	ESG0881XE
		———	———	———	———	———	———
Z	Z01	EZG0881XA	EZG0881XF	EZG0881XB	EZH0881S	EZH0881WX	EZG0881XE
		———	———	———	———	———	———
X	X01	EXG0881XA	EXG0881XF	EXG0881XB	EXG0881S	EXH0881WX	EXG0881XE
X	X02	EXG0882XA	EXG0882XF	EXG0882XB	EXG0882S	EXH0882WX	EXG0882XE

DETAIL 5

PUMP & COMPRESSOR DETAIL

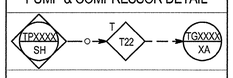


GROUP ALARM SUMMARY

AREA	GROUP ALARM	ALARM SENSOR
X	EA-G0872XA	EX-P0546-T
		EX-P0548-T
		EX-P0550-T
		EX-P0552-T
		EX-P0555-T
R		ER-P0502-T
		ER-P0503-T
		ER-P0504-T
		ER-P0505-T
		ER-P0506-T
		ER-L0501-T
		ER-L0502-T
		ER-L0503-T
		ER-L0504-T
		ER-L0505-T
		ER-P0510-T
		ER-P0550-T
		ER-P0551-T
		ER-P0556-T
		ER-P0557-T
		ER-P0570-T
		ER-L0509-T

DETAIL 5

PUMP & COMPRESSOR DETAIL

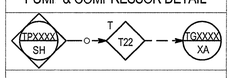


GROUP ALARM SUMMARY

AREA	GROUP ALARM	ALARM SENSOR
R		ER-L0510-T
		ER-L0506-T
		ER-L0507-T
		ER-L0508-T
D		ED-P0510-T
		ED-P0511-T
		ED-L0510-T
		ED-L0511-T
		ED-P0540-T
		ED-P0541-T
		ED-P0542-T
		ED-P0543-T
		ED-L0504-T
		ED-P0504-T
		ED-P0650-T
		ED-P0651-T
		ED-P0652-T
		ED-P0653-T
		ED-P0654-T
		ED-P0655-T
		ED-P0656-DT
		ED-P0657-DT

DETAIL 5

PUMP & COMPRESSOR DETAIL

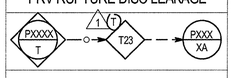


GROUP ALARM SUMMARY

AREA	GROUP ALARM	ALARM SENSOR
D		ED-P0658-DT
		ED-P0659-DT
		ED-P0660-DT
		ED-P0661-DT
T		ET-P0500-T
		ET-P0501-T
		ET-P0502-T
		ET-P0503-T
		ET-P0540-T
		ET-P0541-T
C		EC-P0500-T
		EC-P0501-T
		EC-P0502-T
		EC-P0503-T
		EC-P0504-T
		EC-L0500-T
		EC-L0501-T
		EC-L0502-T
		EC-L0503-T
		EC-L0504-T

DETAIL 6

PRV RUPTURE DISC LEAKAGE

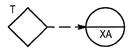


GROUP ALARM SUMMARY

AREA	GROUP ALARM	ALARM SENSOR
D	EA-P0871-XA	ED-P0564-T
		ED-P0563-T 1

DETAIL 7

TRICONEX SYSTEM MISC ALARMS

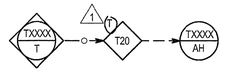


ALARM SUMMARY

TRICONEX SYSTEMS	ALARMS
SIS-EP-PLY	EAX0500XA
SIS-EP-FIN	EAX0501XA

DETAIL 2

TAGGING TABLE OF INDEPENDENT PRIORITY 1 ALARMS

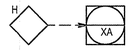


TRICONEX BASED CONSOLE: EPDM

AREA	TRICONEX SYSTEM NUMBERS	INDEPENDENT PRIORITY 1 ALARM (SENSOR)
C	C20	EC-L0518-T
R	R20	ER-F0536-T
R	R20	ER-F0537-T
R	R20	ER-L0752-T
L	L20	EL-T0501-T
L	L20	EL-T0502-T
L	L20	EL-P0510-T
L	L20	EL-P0511-T
L	L20	EL-P0513-T
L	L20	EL-L0504-T
T	T20	ET-T0504-T
D	D20	ED-L0526-T
D	D20	ED-P0528-T
D	D20	ED-P0577-T (T2) 1
D	D20	ED-T0597-T
D	D20	ED-A0505-T
D	D20	ED-P0529-T
D	D20	ED-P0532-T 1
S	S20	ES-T0503-T
S	S20	ES-T0504-T
S	S20	ES-F0532-T
S	S20	ES-X0515-S 1
U	U20	EU-T0597-T

DETAIL 8

EXPERION SYSTEM MISC ALARMS (PRIORITY 2)

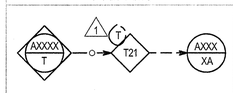


ALARM SUMMARY

EXPERION SYSTEMS	ALARMS
KMDCS-EP-ER1-CLS6-CN01	EAX0001XA
KMDCS-EP-ER1-CLS6-CN02	EAX0002XA
KMDCS-EP-ER1-CLS6-CN03	EAX0003XA
KMDCS-EP-ER1-CLS6-CN04	EAX0004XA
KMDCS-EP-ER1-CLS6-CN05	EAX0005XA
KMDCS-EP-ER1-CLS6-CN06	EAX0006XA
KMDCS-EP-ER1-CLS6-CN07	EAX0007XA
KMRIO-EP-RCB-CLS6-CN01	EAX0008XA
KMDCS-EP-846-CLS6-CN09	EAX0009XA
KMDCS-EP-845-CLS6-CN10	EAX0010XA

DETAIL 3

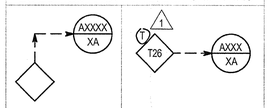
GAS DETECTION PRIORITY 1 ALARMS



TRICONEX BASED CONSOLE: EPDM

AREA	GROUP ALARM	ALARM SENSOR
R	EA-A0891-XA	ER-A0804-T
	1	ER-A0855-T
		ER-A0850-T
		ER-A0860-T
		ER-A0861-T
		ER-A0862-T
		ER-A0863-T
		ER-A0865-T
		1 ER-A0866-T
	1	
D	EA-A0891-XA	ED-A0810-T
		ED-A0867-T 1
	1	
S	ES-A0891-XA	ES-A0801-T
		ES-A0802-T
		1 ES-A0856-T
X		EX-A0800-T
		EX-A0801-T
		EX-A0802-T
		EX-A0803-T
		EX-A0816-T
		EX-A0818-T
		EX-A0820-T
		EX-A0823-T
1 L	EA-A0891-XA	EL-A0864-T
1 U	EA-A0891-XA	EU-A0821-T

GAS DETECTION PRIORITY 1 ALARMS BUILDINGS AND ANAYLYZER SHELTERS



CONTROL ROOM HVAC (INLET GAS DETECTION)		ANALYZER SHELTER
ALARM	ALARM GROUP SUMMARY	ALARM SENSOR
1	EZ-A0891-XA	EZ-A0502-T 1
		EZ-A0503-T

1

NOTES:

1. DELETED.
2. SINGLE LOGIC REFERENCE NUMBERS MAY CONTAIN MULTIPLE SECTIONS OF THE SAME OPERATING AREA.
3. DELETED.
4. INDEPENDENT PRIORITY 1 ALARMS ARE SHOWN ON RELEVANT P&IDS.
5. DELETED.
6. DELETED.
7. REFER TO DOCUMENT 00-X-0021-PH, PRIORITY 1 AND PRIORITY 2 ALARMS P&ID PHILOSOPHY.
8. DELETED.
9. DELETED. 1
10. DELETED.
11. DELETED.

HOLDS:

30. DELETED. 1

T. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	MCG	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
COMMON ALARMS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2013	1 OF 1	1

SAFETY SHOWER IDENTIFICATION CHART

EWSS NO.	P&ID	STATION TYPE	FLOW DIA. UNIT NO.	LOCATION	SUPPLY LINE	RETURN LINE	INSTRUMENT TAG NUMBERS			
							PCV	PG	RO	
ES/680	ES-K-2787	GROUND		F&P 1FL GL+300 NEAR ES-P-03B	2"-DW-ES1076-12CG0T01		P1035CV	P1035G		
ES/681	ES-K-2787	GROUND		F&P 1FL GL+300 ELEVATOR NORTH SIDE	2"-DW-ES1081-12CG0T01		P1036CV	P1036G		
ES/650	EU-K-2875	GROUND		1A 1FL GL+300 NEAR ER-E-19	2"-DW-EU1133-12CG0T01	1	P1050CV	P1050G		
ES/651	EU-K-2875	GROUND		1A 1FL GL+300 NEAR EC-P-13C	2"-DW-EU1158-12CG0T01	2"-DW-EU1291-12CG0T01	P1051CV	P1051G	F1051RO	1
ES/652	EU-K-2875	GROUND		1A 1FL GL+300 NEAR ER-D-01A	2"-DW-EU1139-12CG0T01		P1052CV	P1052G		
ES/653	EU-K-2875	GROUND		2A 1FL GL+300 NEAR ER-P-08A	2"-DW-EU1150-12CG0T01		P1053CV	P1053G		
ES/654	EU-K-2875	GROUND		2A 1FL GL+300 NEAR ER-E-09	2"-DW-EU1141-12CG0T01	1	P1054CV	P1054G		
ES/655	EU-K-2875	GROUND		2B 1FL GL+300 NEAR EC-E-09	2"-DW-EU1102-12CG0T01		P1055CV	P1055G		
ES/656	EU-K-2875	GROUND		2B 1FL GL+300 NEAR ER-D-03A	2"-DW-EU1129-12CG0T01	2"-DW-EU1277-12CG0T01	P1056CV	P1056G	F1056RO	1
ES/661	EU-K-2875	GROUND		3A 1FL GL+300 NEAR EL-D-02	2"-DW-EU1177-12CG0T01	1	P1057CV	P1057G		
ES/662	EU-K-2875	GROUND		3A 1FL GL+300 NEAR EZ-D-50	2"-DW-EU1178-12CG0T01	2"-DW-EU1295-12CG0T01	P1058CV	P1058G	F1058RO	1
ES/674	EU-K-2875	GROUND		3A 1FL GL+300 NEAR ER-FIL-01B	2"-DW-EU1176-12CG0T01	1	P1059CV	P1059G		
ES/658	EU-K-2875	GROUND		3B 1FL GL+300 NEAR ER-R-10,20	2"-DW-EU1163-12CG0T01		P1060CV	P1060G		
ES/659	EU-K-2875	GROUND		3B 1FL GL+300 NEAR ED-P-65	2"-DW-EU1162-12CG0T01	2"-DW-EU1280-12CG0T01	P1061CV	P1061G	F1061RO	1
ES/663	EU-K-2875	GROUND		3B 1FL GL+300 NEAR EL-E-03	2"-DW-EU1175-12CG0T01	1	P1062CV	P1062G		
ES/667	EU-K-2875	GROUND		4A 1FL GL+300 NEAR ED-E-01	2"-DW-EU1180-12CG0T01		P1063CV	P1063G		
ES/665	EU-K-2875	GROUND		4B 1FL GL+300 NEAR EC-D-11	2"-DW-EU1174-12CG0T01		P1064CV	P1064G		
ES/666	EU-K-2875	GROUND		4B 1FL GL+300 NEAR EL-E-01	2"-DW-EU1179-12CG0T01		P1065CV	P1065G		
ES/668 1	EU-K-2875	GROUND		5A 1FL GL+300 NEAR EL-D-01	2"-DW-EU1181-12CG0T01		P1066CV	P1066G		
ES/669	EU-K-2875	GROUND		5A 1FL GL+300 NEAR ED-D-64	2"-DW-EU1195-12CG0T01	2"-DW-EU1302-12CG0T01	P1067CV	P1067G	F1067RO	1
ES/672	EU-K-2875	GROUND		5A 1FL GL+300 NEAR ED-D-66	2"-DW-EU1183-12CG0T01		P1068CV	P1068G		
ES/670	EU-K-2875	GROUND		5A 1FL GL+300 NEAR ED-DL-01	2"-DW-EU1191-12CG0T01		P1069CV	P1069G		
ES/673	EU-K-2875	GROUND		5A 1FL GL+300 NEAR ED-X-04	2"-DW-EU1196-12CG0T01	1	P1070CV	P1070G		
ES/682	ES-K-2787	ELEVATED		F&P 1FL GL+600 ELEVATOR SOUTH SIDE	2"-DW-ES1086-12CG0T01	2"-DW-ES1093-12CG0T01	P1040CV	P1040G	F1040RO	
ES/683	ES-K-2787	ELEVATED		F&P P/F GL+4,700 NEAR ES-D-05	2"-DW-ES1092-12CG0T01	2"-DW-ES1091-12CG0T01	P1041CV	P1041G	F1041RO	
ES/684	ES-K-2787	ELEVATED		F&P 2FL GL+6,600 ELEVATOR SOUTH SIDE	2"-DW-ES1090-12CG0T01	2"-DW-ES1095-12CG0T01	P1042CV	P1042G	F1042RO	
ES/685	ES-K-2787	ELEVATED		F&P 3FL GL+11,200 ELEVATOR SOUTH SIDE	2"-DW-ES1089-12CG0T01	2"-DW-ES1094-12CG0T01	P1043CV	P1043G	F1043RO	
ES/688	ES-K-2787	ELEVATED		F&P 4FL GL+18,950 ELEVATOR SOUTH SIDE	2"-DW-ES1067-12CG0T01	2"-DW-ES1065-12CG0T01	P1044CV	P1044G	F1044RO	
ES/689	ES-K-2787	ELEVATED		F&P 4FL GL+18,950 NEAR ES-D-05	2"-DW-ES1097-12CG0T01	2"-DW-ES1096-12CG0T01	P1045CV	P1045G	F1045RO	
ES/691	ES-K-2787	ELEVATED		F&P RFL GL+24,950 ELEVATOR SOUTH SIDE	2"-DW-ES1063-12CG0T01	2"-DW-ES1055-12CG0T01	P1046CV	P1046G	F1046RO	
ES/664 1	EU-K-2875	ELEVATED		4B P/F GL+4,500 NEAR EC-D-12	2"-DW-EU1161-12CG0T01	2"-DW-EU1168-12CG0T01	P1080CV	P1080G	F1080RO	
ES/671	EU-K-2875	ELEVATED		5A P/F GL+8,000 NEAR ED-P05B	2"-DW-EU1190-12CG0T01	2"-DW-EU1197-12CG0T01	P1081CV	P1081G	F1081RO	
ES/660	EU-K-2875	ELEVATED		3B 1FL GL+8.000 NEAR ER-D-20	2"-DW-EU1205-12CG0T01	2"-DW-EU1282-12CG0T01	P1071CV	P1071G	F1071RO	1
ES/657	EU-K-2875	GROUND		2B 1FL GL+300 NEAR EU-D-70	2"-DW-EU1203-12CG0T01	1	P1072CV	P1072G		
ES/686	ES-K-2787	ELEVATED		1B 3FL GL+111.400 NEAR ES-TK-15	2"-DW-ES1109-12CG0T01	2"-DW-ES1110-12CG0T01	P1049CV	P1049G	F1049RO	
ES/690	ES-K-2787	ELEVATED		1B 4FL GL+119.150 NEAR ES-FIL-09	2"-DW-ES1078-12CG0T01	2"-DW-ES1079-12CG0T01	P1050CV	P1050G	F1050RO	
ES/687	ES-K-2787	ELEVATED		1A 3FL GL+115.900 NEAR ES-WF-09	2"-DW-ES1114-12CG0T01	2"-DW-ES1112-12CG0T01	P1051CV	P1051G	F1051RO	
ES/675	EU-K-2875	ELEVATED		1FL EL+106.500 B.L.	2"-DW-EU1322-12CG0T01	2"-DW-EU1323-12CG0T01	P1100CV	P1100G	F1100RO	1

NOTE 2

NOTES:

1. DELETED.
2. FOR SAFETY SHOWER REPRESENTATION DETAILS, SEE 00-K-2009.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	MCG	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
SAFETY SHOWER IDENTIFICATION CHART

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2020	1 OF 1	1

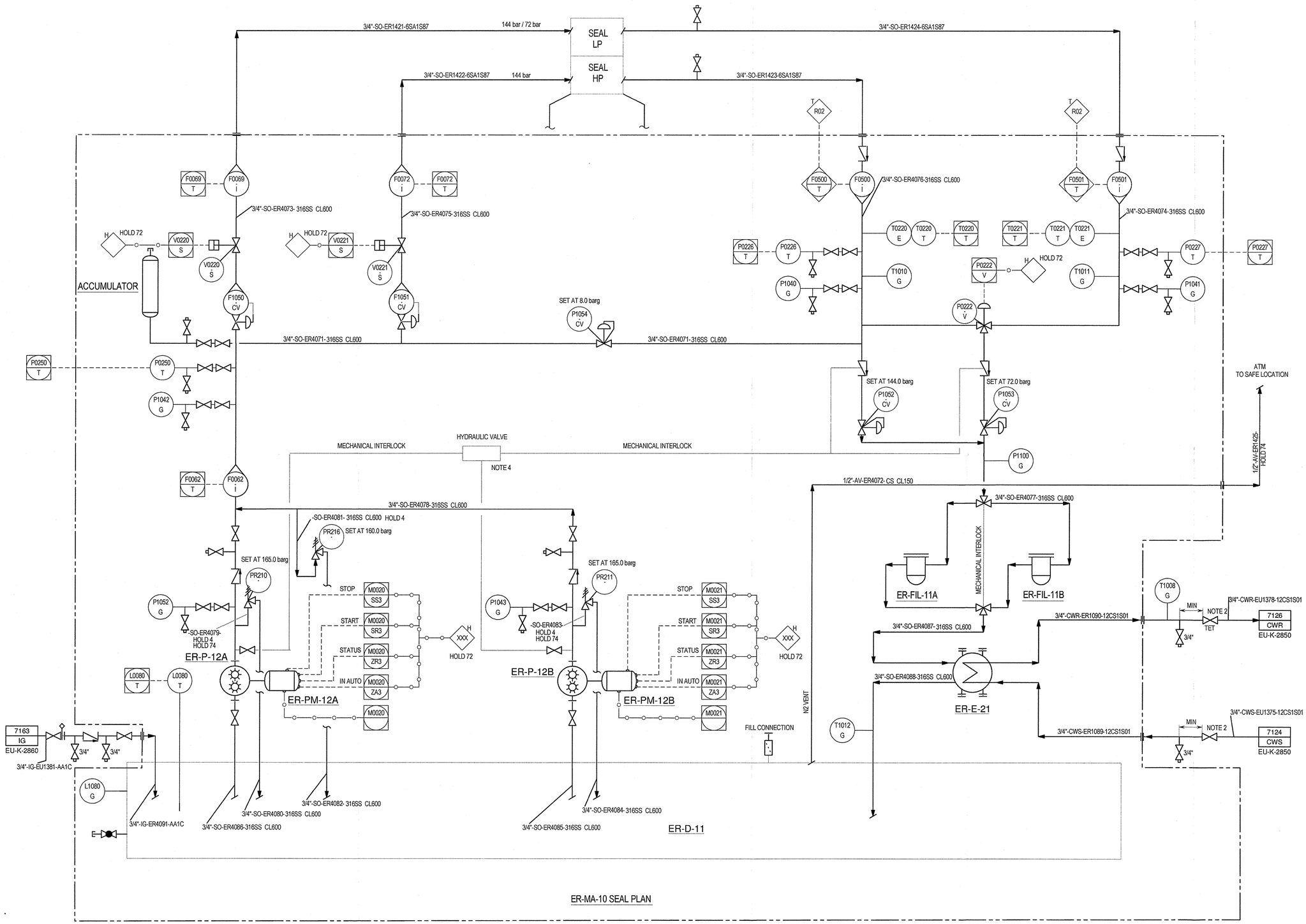
ER-MA-10
Service: R1 POLYMERIZATION REACTOR AGITATOR
Materials of Construction: LTCS
Power Requirements: 260 kW
NOTE 3

ER-D-11
Service: OIL TANK
Dimension: 1300 mm x 810 mm x 595 mm

ER-FIL-11A/B
Service: OIL FILTER

ER-E-21
Service: OIL EXCHANGER
Type: Generic 2 Shell & Tube heat exchanger
Heat Duty: 7 kW
Materials of Construction: 316 S.S. (Tubes): 316SS
Hot design pressure/temperature: 50 barg / 100 C
Cold design pressure/temperature: 16 barg / 0 C

ER-X-11
Service: AGITATOR LUBE OIL SYSTEM PACKAGE



ER-MA-10 SEAL PLAN

ER-P-12A / B
Service: OIL PUMP
Type: Gear pump
Capacity: 1.8 m^3/hr (30l/min @ 1790 rpm)
Differential Press.: 145.0 bar
Material of Construction: CS

NOTES:
1. THE INSTRUMENT TAG NAMES ARE PREFIXED "ER".
2. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
3. PLEASE, REFER TO ER-K-2261.
4. HYDRAULIC VALVE: TO KEEP THE SYSTEM PRESSURIZED WITH A LACK OF PRESSURIZATION FROM HYDRAULIC CHANGE OVER VALVE, CHECK VALVES CHANGE TO CLOSE POSITION.

HOLDS:
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. DELETED.
72. INTERLOCK NUMBERING WILL BE ADDED WITH VENDOR INFORMATION ABOUT PACKAGE CONTROL.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	23/10/2013	FINAL ISSUE REVISED	MCG	DRF	RAF
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
ER-MA-10 SEAL PLAN

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2030	1 OF 1	2

VOID

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
V	23/10/2013	ISSUE FOR VOID	MCG	PSA	RAF
0	13/09/2013	FINAL ISSUE	MCG	PSA	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
ER-MA-10, ER-MA-12, ER-MA-20 SEAL PLAN

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

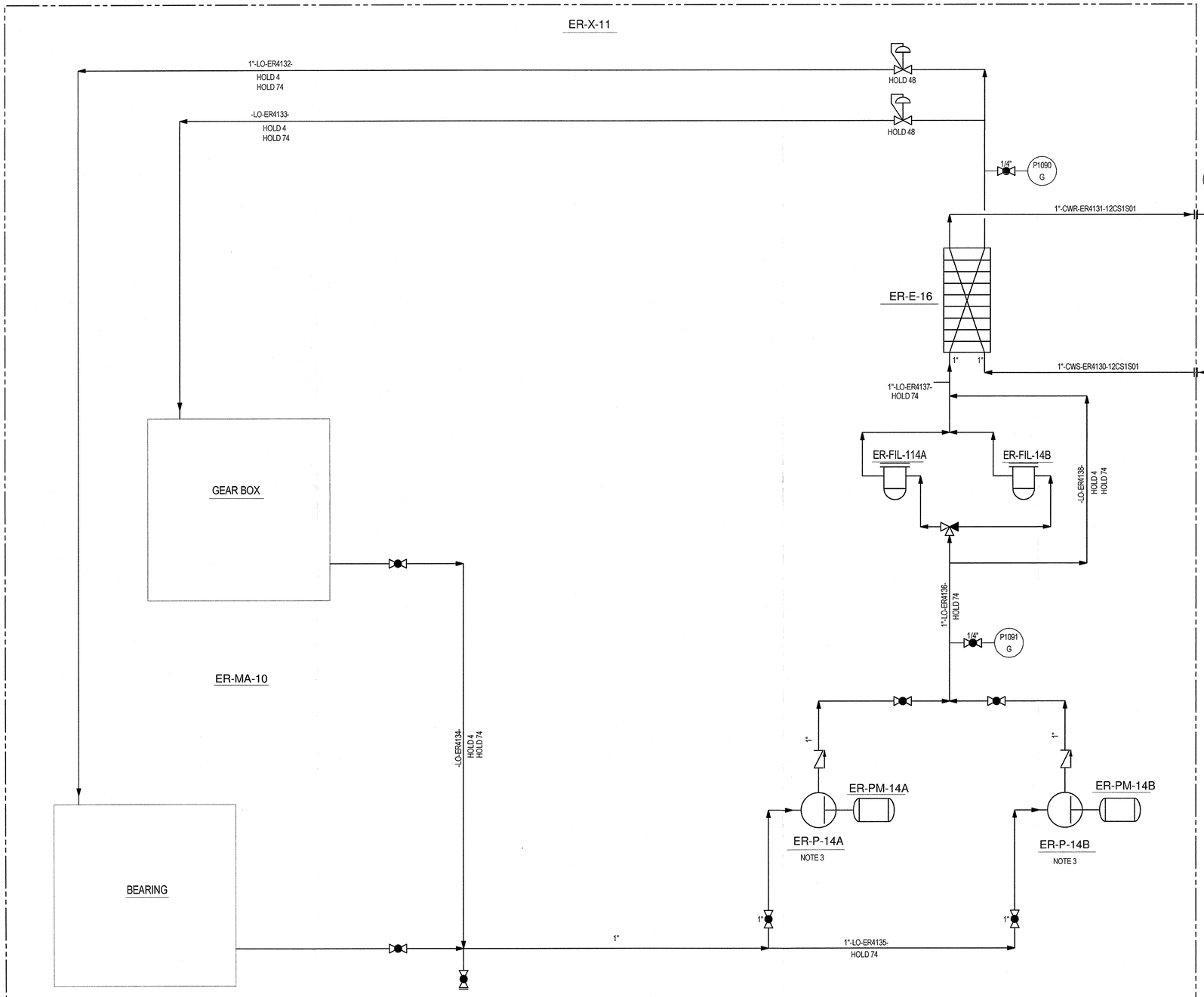
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2030A	1 OF 1	V

ER-X-11
Service: AGITATOR LUBE OIL SYSTEM PACKAGE

ER-MA-10
Service: R1 POLYMERIZATION REACTOR AGITATOR
Materials of Construction: LTCS
Power Requirements: 260 kW

ER-E-16
Service: AGITATOR LUBE OIL COOLER
Type: Plate heat exchanger
Heat Duty: HOLD 8
Materials of Construction: HOLD 8

ER-FIL-14A/B
Service: AGITATOR LUBE OIL FILTER
Type: DUPLEX FILTER
Capacity: 4.8 m3/hr
Differential press: 20 bar



ER-P-14A/ B
Service: AGITATOR LUBE OIL PUMP
Type: Reciprocating pump
Capacity: 1.0 m^3/hr
Differential Press.: 30.0 bar
Material of Construction: HOLD 8

NOTES:

1. THE INSTRUMENT TAG NAMES ARE PREFIXED "ER".
2. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
3. POSITIVE DISPLACEMENT PUMP WITH INTERNAL RELIEF VALVE (SET PRESSURE 14 bar).

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
48. TAG NUMBER TO BE DEFINED LATER.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	23/10/2013	ISSUE FOR CONSTRUCTION	MC3	ORF	RAF

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PROJECT:
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EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND MOMENCLATURE
ER-MA-10 LUBRICATION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EA-K-2030B	1 OF 1	0

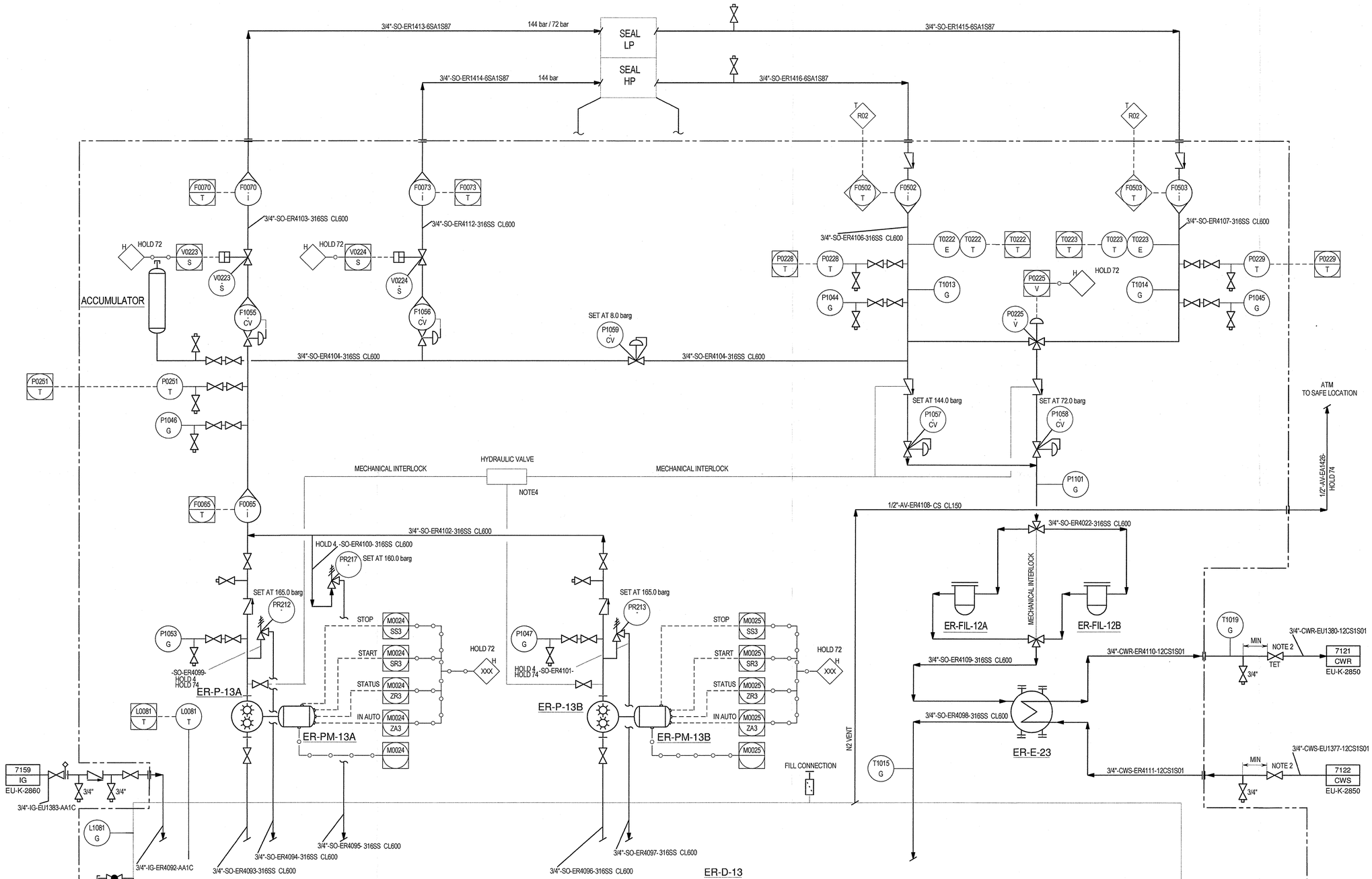
ER-MA-12
Service: QUENCH MIXER AGITATOR
Materials of Construction: CS
Power Requirements: 22 kW
NOTE 3

ER-D-13
Service: OIL TANK
Dimension: 1300 mm x 810 mm x 595 mm

ER-FIL-12A/B
Service: OIL FILTER

ER-E-23
Service: OIL EXCHANGER
Type: Generic 2 Shell & Tube heat exchanger
Heat Duty: 7 kW
Materials of Construction: 316 S.S. (Tubes): 316 S.S.
Hot design pressure/temperature: 50 barg / 100 C
Cold design pressure/temperature: 16 barg / 0 C

ER-X-12
Service: SEAL OIL SYSTEM PACKAGE FOR ER-MA-12



ER-MA-12 SEAL PLAN

ER-P-13A / B
Service: OIL PUMP
Type: Gear pump
Capacity: 1.8 m^3/hr (30l/min @ 1790 rpm)
Differential Press.: 145.0 bar
Material of Construction: CS

NOTES:

1. THE INSTRUMENT TAG NAMES ARE PREFIXED "ER".
2. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
3. PLEASE, REFER TO ER-K-2261.
4. HYDRAULIC VALVE: TO KEEP THE SYSTEM PRESSURIZED WITH A LACK OF PRESSURIZATION FROM HYDRAULIC CHANGE OVER VALVE, CHECK VALVES CHANGE TO CLOSE POSITION.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
72. INTERLOCK NUMBERING WILL BE ADDED WITH VENDOR INFORMATION ABOUT PACKAGE CONTROL.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	23/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
ER-MA-12 SEAL PLAN

SCALE	AREA	PROJECT NUMBER	SIZE
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A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2030C	1 OF 1	0

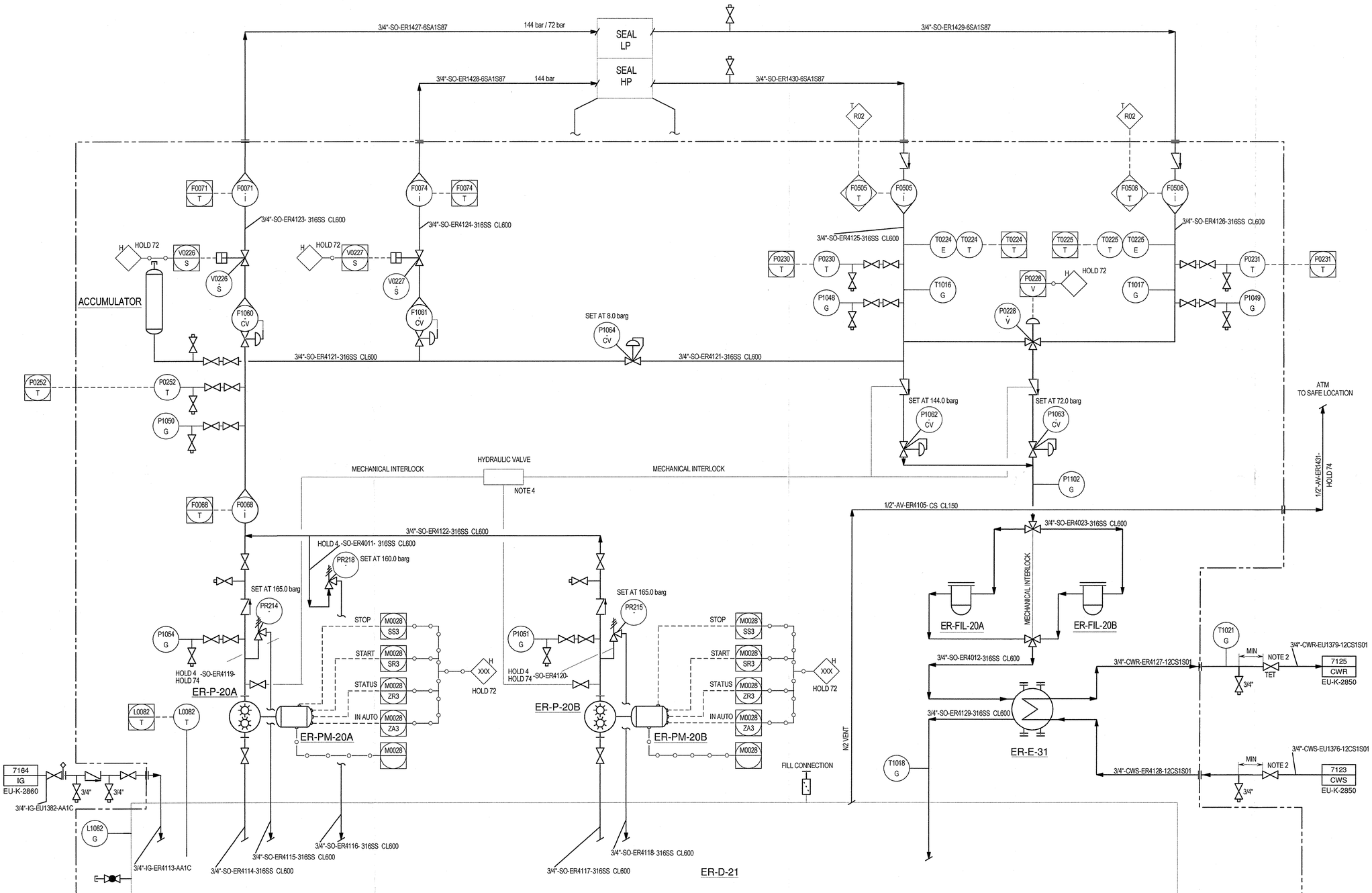
ER-MA-20
Service: R1 POLYMERIZATION REACTOR AGITATOR
Materials of Construction: CS
Power Requirements: 260 kW
NOTE 3

ER-D-21
Service: OIL TANK
Dimension: 1300 mm x 810 mm x 595 mm

ER-FIL-20A/B
Service: OIL FILTER

ER-E-31
Service: OIL EXCHANGER
Type: Generic 2 Shell & Tube heat exchanger
Heat Duty: 7 kW
Materials of Construction: 316 S.S. (Tubes): 316SS
Hot design pressure/temperature: 50 barg / 100 C
Cold design pressure/temperature: 16 barg / 0 C

EA-X-21
Service: AGITATOR LUBE OIL SYSTEM PACKAGE



ER-MA-20 SEAL PLAN

ER-P-20A / B
Service: OIL PUMP
Type: Gear pump
Capacity: 1.8 m^3/hr (30l/min @ 1790 rpm)
Differential Press.: 145.0 bar
Material of Construction: CS

NOTES:
1. THE INSTRUMENT TAG NAMES ARE PREFIXED "ER".
2. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
3. PLEASE, REFER TO ER-K-2261.
4. HYDRAULIC VALVE: TO KEEP THE SYSTEM PRESSURIZED WITH A LACK OF PRESSURIZATION FROM HYDRAULIC CHANGE OVER VALVE, CHECK VALVES CHANGE TO CLOSE POSITION.

HOLDS:
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
72. INTERLOCK NUMBERING WILL BE ADDED WITH VENDOR INFORMATION ABOUT PACKAGE CONTROL.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	23/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
ER-MA-20 SEAL PLAN

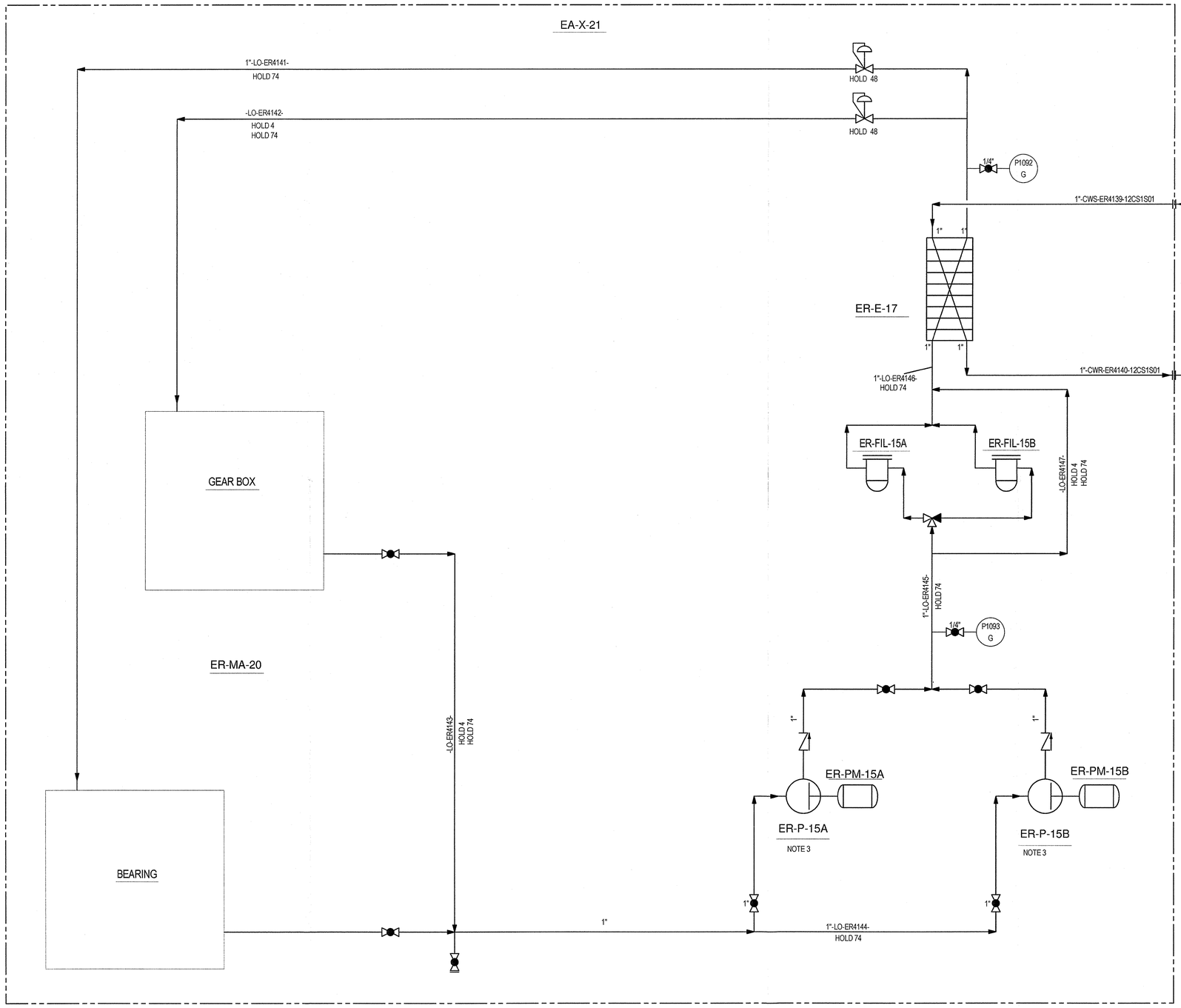
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2030D	1 OF 1	0

EA-X-21
Service: AGITATOR LUBE OIL SYSTEM PACKAGE

ER-MA-20
Service: R1 POLYMERIZATION REACTOR AGITATOR
Materials of Construction: CS
Power Requirements: 260 kW

ER-E-17
Service: AGITATOR LUBE OIL COOLER
Type: Plate heat exchanger
Heat Duty: HOLD 8
Materials of Construction: HOLD 8

ER-FIL-15A/B
Service: AGITATOR LUBE OIL FILTER
Type: DUPLEX FILTER
Capacity: 4.8 m3/hr
Differential press: 20 bar



ER-P-15A/ B
Service: AGITATOR LUBE OIL PUMP
Type: Reciprocating pump
Capacity: 1.0 m^3/hr
Differential Press.: 30.0 bar
Material of Construction: HOLD 8

NOTES:

1. THE INSTRUMENT TAG NAMES ARE PREFIXED "ER".
2. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
3. POSITIVE DISPLACEMENT PUMP WITH INTERNAL RELIEF VALVE (SET PRESSURE 14bar).

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
48. TAG NUMBER TO BE DEFINED LATER.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	23/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND MOMENCLATURE
ER-MA-20 LUBRICATION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2030E	1 OF 1	0

0

VOID

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	MCG	SNYM	NIKKO
B0	30/06/2011	ISSUE FOR REVIEW	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
ET-C-01 LUBE OIL SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EA-K-2031	1 OF 1	0

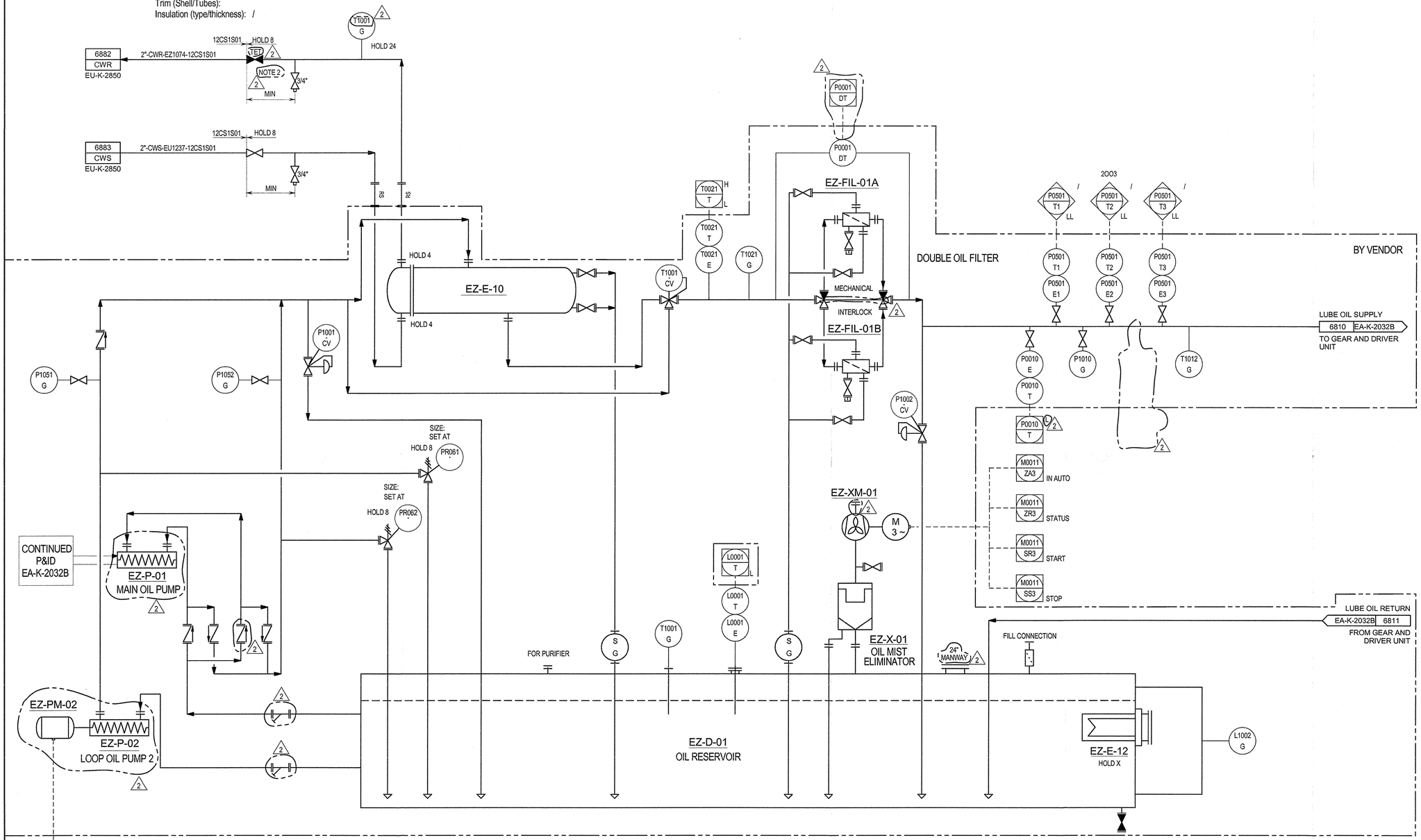
EZ-E-10 HOLD 8
Service: OIL COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty:
Surface Area:
Shell Design Pressure (Max / Min) @ Temperature.: / x
Tube Design Pressure (Max / Min) @ Temperature.: / x
Materials of Construction (Shell/Tubes): /
Trim (Shell/Tubes):
Insulation (type/thickness): /

EZ-X-01
Service: OIL MIST ELIMINATOR

EZ-FIL-01A/ B HOLD 8
Service: OIL FILTER
Type: Filter
Capacity:
Design Pressure (Max / Min) @ Temperature: / x
Differential Pressure:
Material of Construction:
TRIM:

EZ-E-12
Service: OIL HEATER
Type: Bayonet heater
Heat Duty:
Materials of Construction:

EZ-D-01 HOLD 8
Service.: OIL RESERVOIR
Dimension.: x
Design Pressure (Max / Min) @ Temperature.: / x
Materials of Construction.:
Trim.:
Insulation (type/thickness).: /



EZ-P-01 HOLD 8
Service: OIL MAIN PUMP
Type: Screw pump
Capacity:
Differential Press.:
Material of Construction:

EZ-P-02 HOLD 8
Service: OIL AUXILIARY PUMP
Type: Screw pump
Capacity:
Differential Press.:
Material of Construction:

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH "EZ" UNLESS OTHERWISE STATED.
2. COLD SIDE OUTLET VALVE TO BE TAGGED " DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCHED IN FIRST".

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
24. DELETED.
X. ELECTRICAL HEATER CONTROL TO BE CONFIRMED BY VENDOR.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Jubail, Kingdom of Saudi Arabia

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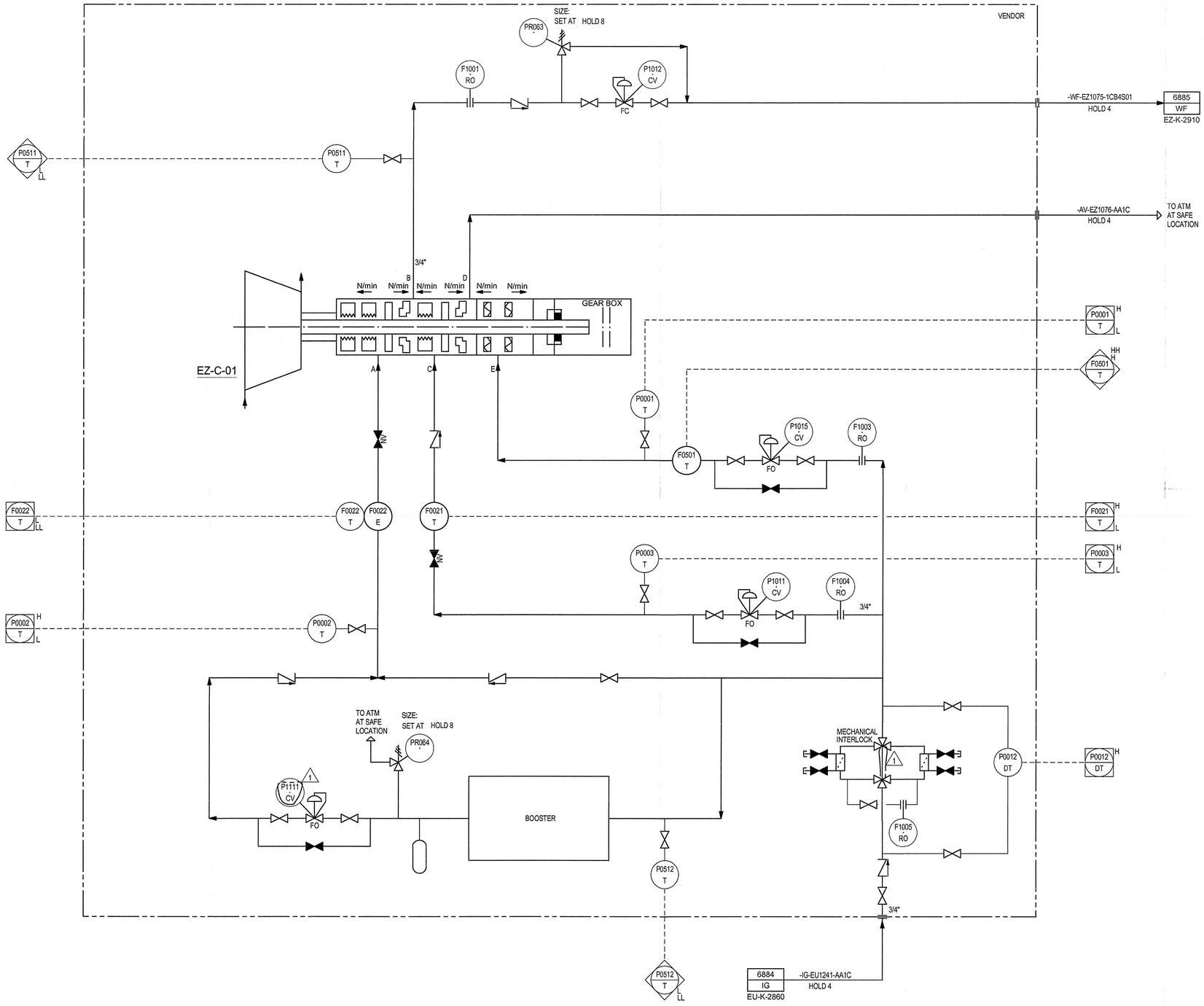
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
EZ-C-01 LUBE OIL AND SEAL GAS SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2032	1 OF 1	2



NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH "EZ" UNLESS OTHERWISE STATED.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

8. BY VENDOR.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
0	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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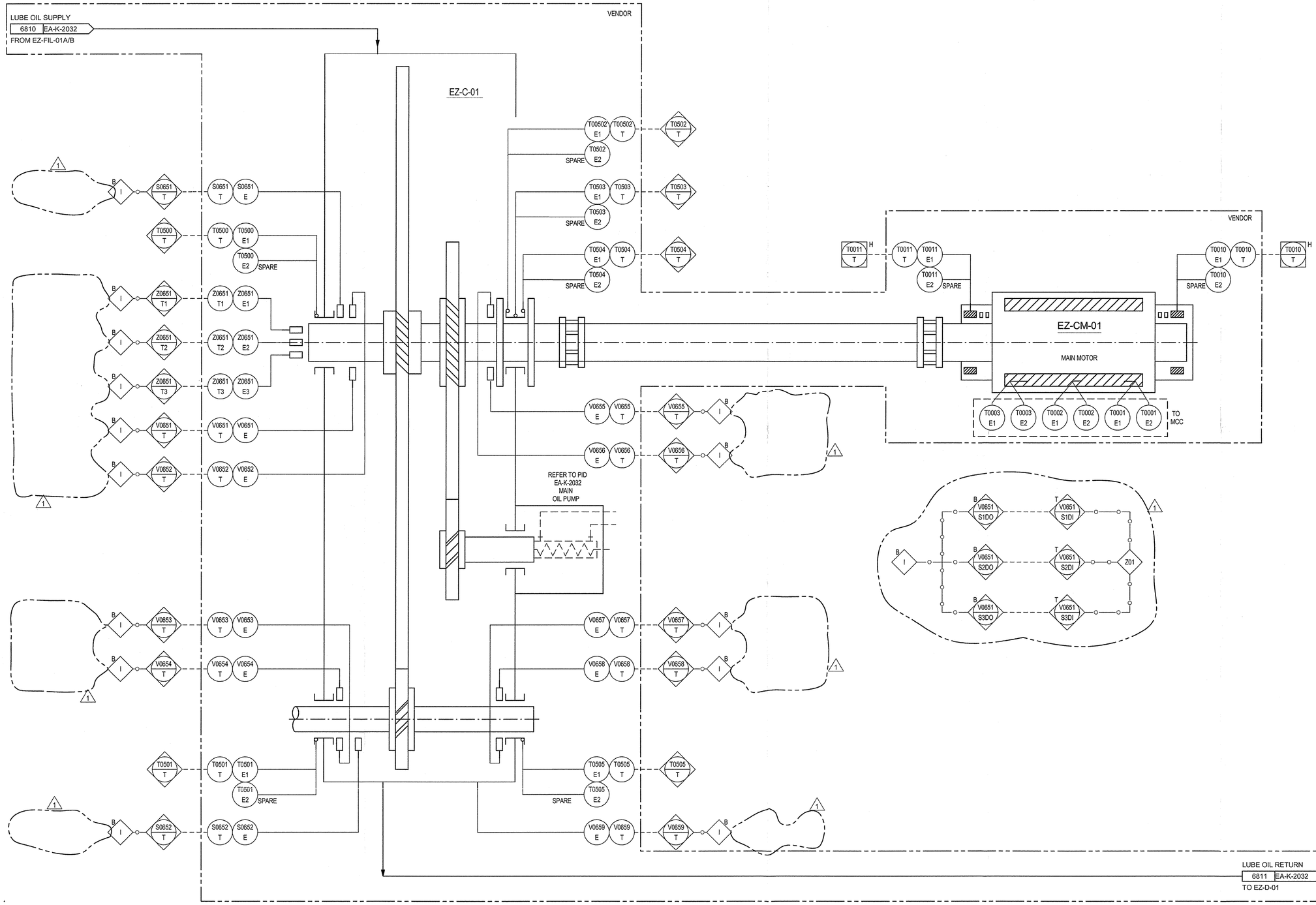
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
EZ-C-01
SEAL GAS SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2032A	1 OF 1	1



NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH "EZ" UNLESS OTHERWISE STATED.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
EZ-C-01
GEAR AND DRIVER UNIT

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EA-K-2032B	1 OF 1	1

POLY

EQUIPMENT	DRAWING	EQUIPMENT	DRAWING	EQUIPMENT	DRAWING
COLUMNS		MISCELLANEOUS		FILTERS	
ET-T-01	ET-K-2400	ER-D-20	ER-K-2240	ER-FIL-01A/B	ER-K-2245A
ET-T-10	ET-K-2410	ER-LA-30	ER-K-2293	ED-FIL-03A/B	ED-K-2680A
ED-T-03	ED-K-2680	ET-X-01	ET-K-2421		
		ED-B-61A/B	ED-K-2690/1		
		ED-B-62A/B	ED-K-2690/1		
		ED-DL-01	ED-K-2620	REACTORS	
COMPRESSORS		ED-DLHYDR-01	ED-K-2620	ER-R-10	ER-K-2261
ET-C-01	ET-K-2421	ED-DLHYDR-03	ED-K-2620	ER-R-20	ER-K-2271
		ED-EX-01	ED-K-2620		
		ED-EXHYDR-02	ED-K-2620		
		ED-X-01	ED-K-2620		
HEAT EXCHANGERS		ED-X-02	ED-K-2620	VESSELS	
EC-E-09	EC-K-2102			EC-D-01	EC-K-2110A
ER-E-06	ER-K-2245A	ED-X-04	ED-K-2641	EC-D-10	EC-K-2110
ER-E-07	ER-K-2245A	ED-X-05	ED-K-2631	EC-D-11	EC-K-2140
ER-E-08	ER-K-2260A	ED-X-06	ED-K-2631	EC-D-12	EC-K-2111
ER-E-09	ER-K-2260A	ED-X-61A/B	ED-K-2690/1	EC-D-20	EC-K-2100
ER-E-18	ER-K-2270A	ED-PEL-01	ED-K-2631	EC-D-22	EC-K-2121
ER-E-19	ER-K-2270A			ER-D-12	ER-K-2280
ER-E-30	ER-K-2292			ER-D-30	ER-K-2291
EL-E-01	EL-K-2300	PUMPS		ER-D-40	ER-K-2290
EL-E-02	EL-K-2300			EL-D-01	EL-K-2310
EL-E-03	EL-K-2301	EC-P-10A/B	EC-K-2110	EL-D-02	EL-K-2320
EL-E-11	EL-K-2300	EC-P-11	EC-K-2140	ET-D-01	ET-K-2400A
ET-E-01	ET-K-2400	EC-P-12A/B	EC-K-2112	ET-D-02	ET-K-2420
ET-E-02	ET-K-2430	EC-P-13A/B/C	EC-K-2131	ET-D-03	ET-K-2421
ET-E-10	ET-K-2411	EC-P-22A/B	EC-K-2122	ET-D-04	ET-K-2421
ET-E-11	ET-K-2410	EC-P-40	EC-K-2100	ET-D-05	ET-K-2430
ET-E-20	ET-K-2412	ER-P-06A/B	ER-K-2245	ED-D-01	ED-K-2610
ED-E-01	ED-K-2640	ER-P-08A/B	ER-K-2260	ED-D-08	ED-K-2641
ED-E-03	ED-K-2680A	ER-P-11A/B	ER-K-2280	ED-D-64	ED-K-2692
ED-E-08	ED-K-2641	ER-P-18	ER-K-2270	ED-D-65	ED-K-2692
ED-E-09	ED-K-2641	ER-P-30	ER-K-2292	ED-D-66	ED-K-2601
ED-E-10	ED-K-2641	ET-P-01A/B	ET-K-2400A		
ED-E-11	ED-K-2641	ET-P-10A/B	ET-K-2411		
ED-E-12	ED-K-2641	ET-P-20A/B	ET-K-2412		
ED-E-13	ED-K-2641	ED-P-01	ED-K-2611	AGITATORS	
ED-E-64	ED-K-2692A	ED-P-02	ED-K-2630	EC-MA-01	EC-K-2110A
		ED-P-03A/B	ED-K-2680	EC-MA-11	EC-K-2140
		ED-P-08	ED-K-2641	EC-MA-12	EC-K-2111
		ED-P-09	ED-K-2641	EC-MA-22	EC-K-2121
MISCELLANEOUS		ED-P-10	ED-K-2641	ER-MA-10	ER-K-2261
EC-D-09	EC-K-2102	ED-P-11	ED-K-2641	ER-MA-12	ER-K-2280
EC-HST-03	EC-K-2100	ED-P-12	ED-K-2641	ER-MA-20	ER-K-2271
EC-WS-05A/B	EC-K-2130	ED-P-13	ED-K-2641	ED-MA-66	ED-K-2601
EC-X-20	EC-K-2100	ED-P-63A/B	ED-K-2690/1		
EC-X-21	EC-K-2100	ED-P-64A/B	ED-K-2692A		
ER-D-01A/B	ER-K-2246	ED-P-65	ER-K-2281		
ER-D-02	ER-K-2220	ED-P-66A/B	ED-K-2601		
ER-D-03A/B	ER-K-2230				

UTILITY

EQUIPMENT	DRAWING
HEAT EXCHANGERS	
EU-E-73	EU-K-2845
EZ-E-01	EZ-K-2941
EZ-E-02	EZ-K-2941
EZ-E-03	EZ-K-2941
EZ-E-04	EZ-K-2940
COMPRESSORS	
EZ-C-01	EZ-K-2941
MISCELLANEOUS	
EU-DS-71	EU-K-2825
EU-DS-72	EU-K-2825
EZ-D-05	EZ-K-2940
EZ-HST-01	EZ-K-2975
EZ-TK-80	EZ-K-2975
EZ-TK-81	EZ-K-2976
EZ-X-20	EZ-K-2957
EZ-X-21	EZ-K-2957
PUMPS	
EU-P-73A/B	EU-K-2845
EZ-P-50	EZ-K-2950
EZ-P-80	EZ-K-2975
EZ-P-81A/B	EZ-K-2976
VESSELS	
EU-D-20	EU-K-2860
EU-D-70	EU-K-2845
EU-D-73	EU-K-2845
EZ-D-04	EZ-K-2940
EZ-D-50	EZ-K-2950

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/09/2011	ISSUE FOR HAZOP	MCG	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
EQUIPMENT INDEX (POLY)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EA-K-2050	1 OF 1	1

F & P

EQUIPMENT	DRAWING	EQUIPMENT	DRAWING	EQUIPMENT	DRAWING	EQUIPMENT	DRAWING	EQUIPMENT	DRAWING
CONVEYORS		CONVEYORS		FANS		MISCELLANEOUS		VESSELS	
ES-CNVR-09	ES-K-2721	ES-CNVR-71	ES-K-2757	ES-B-19	ES-K-2728	ES-WS-40	ES-K-2735	ES-D-03	ES-K-2704A
ES-CNVR-10	ES-K-2722	ES-CNVR-72	ES-K-2757	ES-FAN-02	ES-K-2701	ES-WS-52	ES-K-2756	ES-TK-03	ES-K-2704
ES-CNVR-11	ES-K-2724	ES-CNVR-73	ES-K-2757	ES-FAN-06	ES-K-2713	ES-X-04	ES-K-2704A	ES-TK-04	ES-K-2704A
ES-CNVR-13	ES-K-2728	ES-CNVR-74	ES-K-2757	ES-FAN-07	ES-K-2712	ES-X-08	ES-K-2710	ES-TK-15	ES-K-2705
ES-CNVR-20	ES-K-2731	ES-CNVR-79	ES-K-2742	ES-FAN-08	ES-K-2710	ES-X-09	ES-K-2720	ES-TK-17	ES-K-2728
ES-CNVR-21	ES-K-2731	ES-CNVR-80	ES-K-2742	ES-FAN-09A/B	ES-K-2771	ES-X-10	ES-K-2722	ES-TK-90	ES-K-2779
ES-CNVR-22	ES-K-2731	ES-CNVR-81	ES-K-2756	ES-FAN-99	ES-K-2770	ES-X-17	ES-K-2728		
ES-CNVR-23	ES-K-2731	ES-CNVR-82	ES-K-2756			ES-X-18	ES-K-2728	AGITATORS	
ES-CNVR-24	ES-K-2731	ES-CNVR-83	ES-K-2756			ES-X-19	ES-K-2728	ES-MA-15	ES-K-2705
ES-CNVR-25	ES-K-2732	ES-CNVR-84	ES-K-2756	FILTERS		ES-X-20	ES-K-2730	ES-MA-16	ES-K-2705
ES-CNVR-26	ES-K-2732	ES-CNVR-90	ES-K-2753	ES-FIL-02	ES-K-2701	ES-X-21A/B	ES-K-2731		
ES-CNVR-27	ES-K-2732	ES-CNVR-91	ES-K-2754	ES-FIL-03	ES-K-2701	ES-X-23	ES-K-2731		
ES-CNVR-28	ES-K-2732	ES-CNVR-92	ES-K-2754	ES-FIL-06	ES-K-2713	ES-X-25	ES-K-2748		
ES-CNVR-29	ES-K-2732	ES-CNVR-93	ES-K-2754	ES-FIL-07	ES-K-2712	ES-X-30	ES-K-2753/2758		
ES-CNVR-30	ES-K-2736	ES-CNVR-94	ES-K-2754A	ES-FIL-08	ES-K-2710	ES-X-33	ES-K-2757		
ES-CNVR-31	ES-K-2736	ES-CNVR-95	ES-K-2754A	ES-FIL-09	ES-K-2771	ES-X-35	ES-K-2731		
ES-CNVR-32	ES-K-2736	ES-CNVR-96	ES-K-2754A	ES-FIL-18	ES-K-2728	ES-X-41A/B	ES-K-2736		
ES-CNVR-33	ES-K-2736	ES-CNVR-97	ES-K-2756	ES-FIL-99	ES-K-2770	ES-X-43	ES-K-2736		
ES-CNVR-34	ES-K-2736	ES-CNVR-98	ES-K-2756			ES-X-45	ES-K-2748		
ES-CNVR-35	ES-K-2737	ES-CNVR-99	ES-K-2756			ES-X-46	ES-K-2748		
ES-CNVR-36	ES-K-2737	ES-CNVR-100	ES-K-2756	HEAT EXCHANGERS		ES-X-47	ES-K-2749		
ES-CNVR-37	ES-K-2737	ES-CNVR-101	ES-K-2756	ES-E-07	ES-K-2712	ES-X-48	ES-K-2749		
ES-CNVR-38	ES-K-2738	ES-CNVR-102	ES-K-2756	ES-E-08	ES-K-2710	ES-X-53	ES-K-2756		
ES-CNVR-39	ES-K-2738	ES-CNVR-103	ES-K-2756			ES-X-81	ES-K-2753		
ES-CNVR-40	ES-K-2738	ES-CNVR-104	ES-K-2756			ES-X-84	ES-K-2758		
ES-CNVR-41	ES-K-2740	ES-CNVR-106	ES-K-2754	MISCELLANEOUS		ES-X-85	ES-K-2753		
ES-CNVR-42	ES-K-2740	ES-CNVR-107	ES-K-2757	ES-BG-20	ES-K-2730	ES-X-86	ES-K-2753		
ES-CNVR-43	ES-K-2740	ES-CNVR-108	ES-K-2757	ES-BG-40	ES-K-2735	ES-X-90	ES-K-2779		
ES-CNVR-44	ES-K-2740	ES-CNVR-109	ES-K-2757	ES-D-02	ES-K-2701				
ES-CNVR-45	ES-K-2740	ES-CNVR-110	ES-K-2757	ES-D-05	ES-K-2711				
ES-CNVR-46	ES-K-2748	ES-CNVR-111	ES-K-2757	ES-FDR-10	ES-K-2771	PUMPS			
ES-CNVR-47	ES-K-2749	ES-CNVR-112	ES-K-2757	ES-FDR-19	ES-K-2728	ES-P-03A/B	ES-K-2704		
ES-CNVR-48	ES-K-2749	ES-CNVR-113	ES-K-2757	ES-FDR-99	ES-K-2770	ES-P-04A/B	ES-K-2704A		
ES-CNVR-50	ES-K-2749	ES-CNVR-114	ES-K-2757	ES-HST-01	ES-K-2773	ES-P-15A/B	ES-K-2705		
ES-CNVR-51	ES-K-2749	ES-CNVR-120	ES-K-2758	ES-HST-06	ES-K-2720	ES-P-80A/B	ES-K-2773		
ES-CNVR-52	ES-K-2749	ES-CNVR-121	ES-K-2758	ES-PAL-45	ES-K-2748	ES-P-90A/B	ES-K-2779		
ES-CNVR-60	ES-K-2741	ES-CNVR-122	ES-K-2758	ES-ROB-30	ES-K-2757				
ES-CNVR-61	ES-K-2741	ES-CNVR-123	ES-K-2758	ES-ROB-50	ES-K-2756				
ES-CNVR-62	ES-K-2741	ES-CNVR-124	ES-K-2758	ES-SCRN-01	ES-K-2700				
ES-CNVR-63	ES-K-2742	ES-CNVR-125	ES-K-2758	ES-SCRN-04	ES-K-2704A				
ES-CNVR-64	ES-K-2742	ES-CNVR-126	ES-K-2758	ES-TK-80	ES-K-2773				
ES-CNVR-65	ES-K-2742	ES-SWR-49	ES-K-2749	ES-VHST-11	ES-K-2732				
ES-CNVR-66	ES-K-2742			ES-VHST-31	ES-K-2757				
ES-CNVR-67	ES-K-2743			ES-VHST-51	ES-K-2756				
ES-CNVR-68	ES-K-2743			ES-WF-09	ES-K-2721				
ES-CNVR-69	ES-K-2743			ES-WS-20	ES-K-2730				
ES-CNVR-70	ES-K-2743			ES-WS-32	ES-K-2757				

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	MCG	SNYM	NIKKO

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Jubail, Kingdom of Saudi Arabia

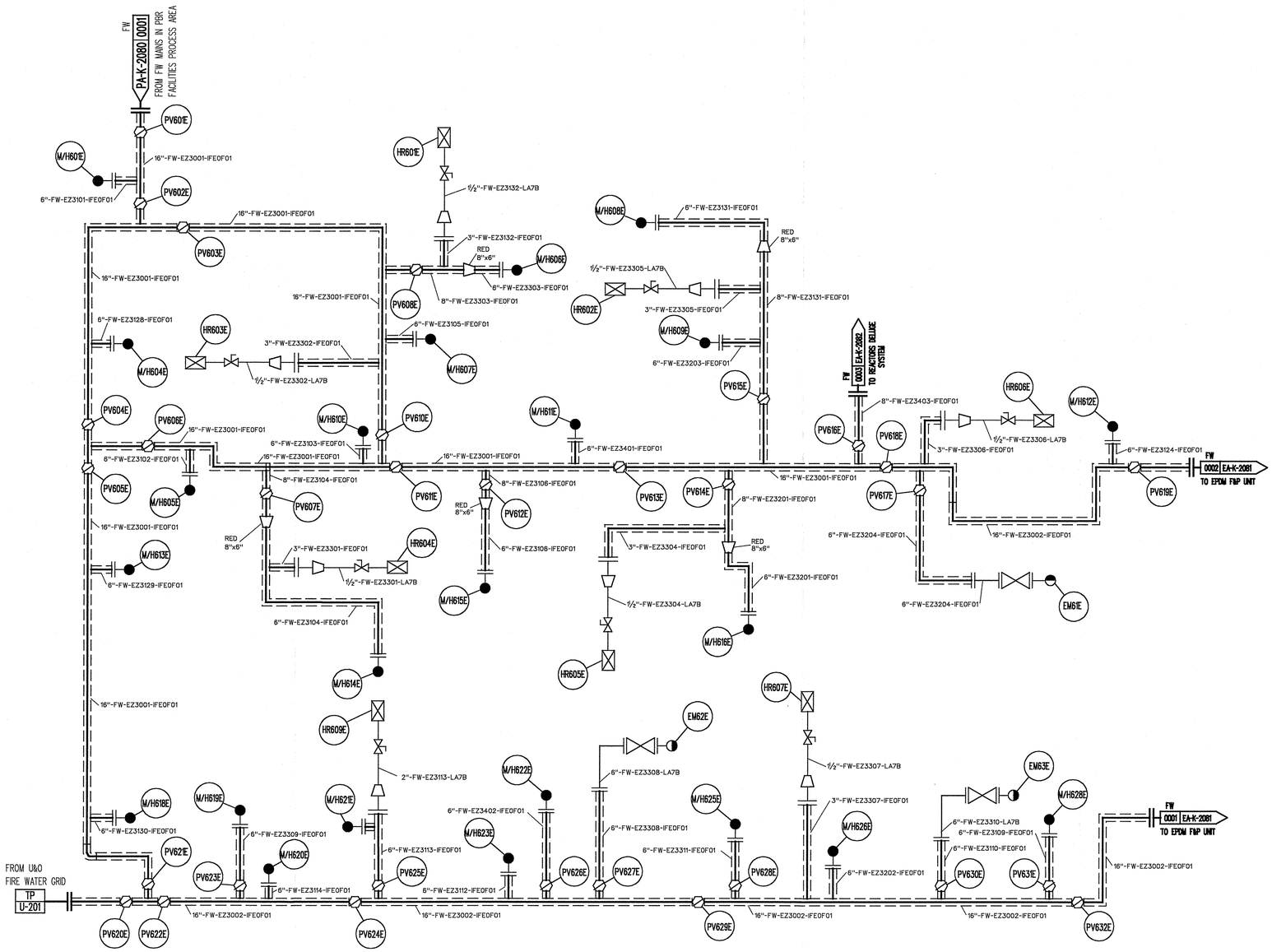
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
SYMBOLS AND NOMENCLATURE
EQUIPMENT INDEX (F&P)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EA-K-2060	1 OF 1	1



NOTES

GENERAL NOTES:

1. FOR SYMBOLS AND ABREVIATIONS SEE DRAWINGS 00-K-2000 TROUGH 00-K-2015.
2. EQUIPMENTS WITH HIGH FIRE POTENTIAL SHALL BE PROTECTED BY TWO MONITORS OR ONE DELUGE SYSTEMS.
3. FIXED MONITORS SHALL BE LOCATED AT LESS 15 m FROM THE AREA WHICH THEY PROTECT
4. HYDRANTS SPACING IN PROCESS AREAS SHAL BE NO MORE THAN 60 m ALONG ROADWAYS OR ACCESSWAY BETWEEN THE HYDRANTS.
5. PROCESS UNIT SHALL BE PROTECTED BY HOSE REELS STATIONS.
6. BUILDINGS SHALL BE PROTECTED BY INDOOR HOSE REELS, EXCEPT OFFICE BUILDINGS THAT SHALL BE PROTECTED BY HOSE RACKS.

LEGEND

SYMBOLS	EQUIPMEN
	UNDERGROUND PIPING
	ABOVEGROUND PIPING
	FIRE WATER HYDRANT MONITOR
	FIRE WATER ELEVATED HYDRANT MONITOR
	FIRE WATER DELUGE VALVE
	POST INDICATOR VALVE
	FIRE WATER DELUGE NOZZLE
	FIRE DETECTION HEAT DETECTOR
	HOSE REEL

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	07-AUG-13	ISSUED FOR CONSTRUCTION	ABDELMAJID	ABDELMAJID	PL

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

كيميا kemya — شركة الجبيل للبتروكيماويات al jubail petrochemical co

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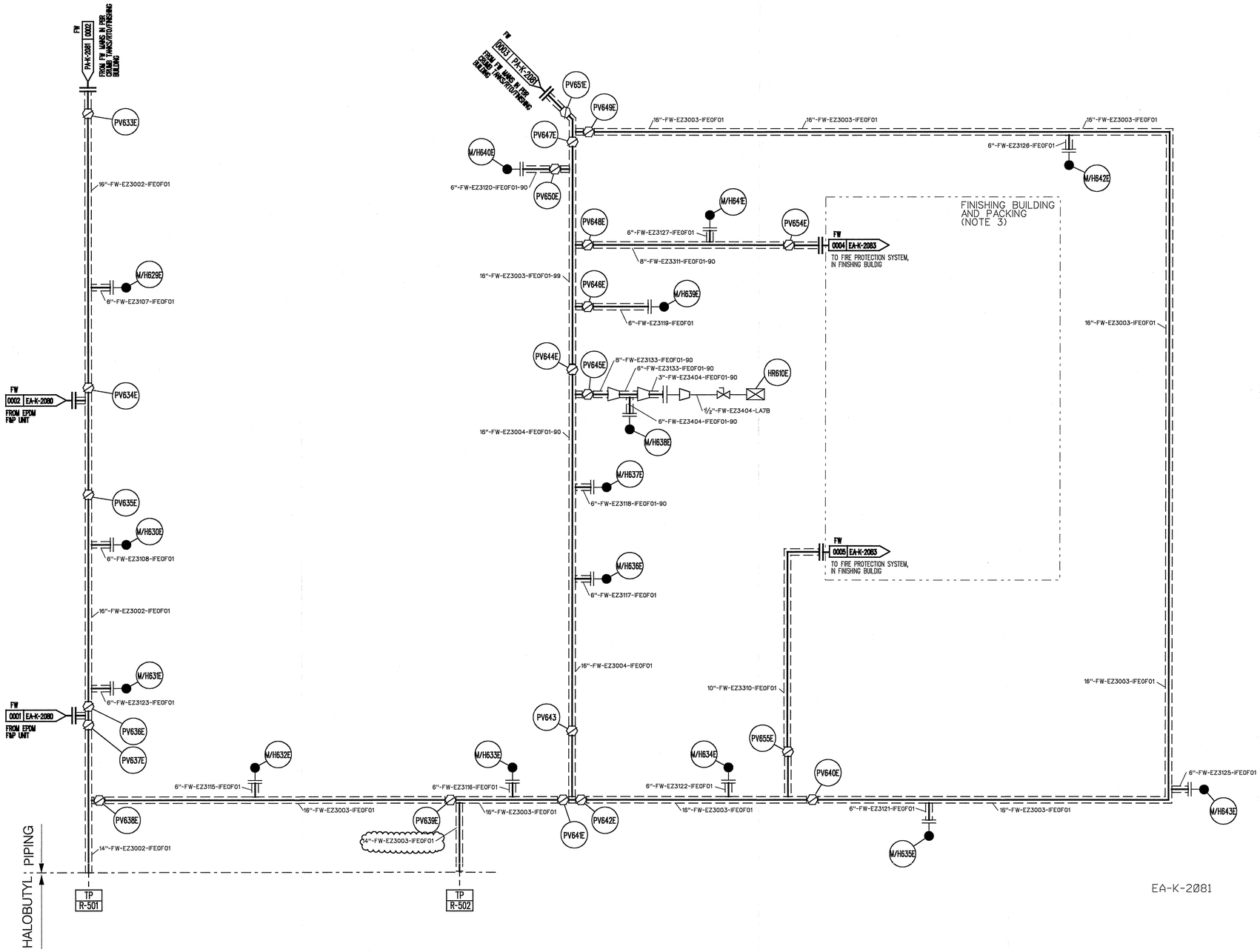
PROJECT: Saudi Elastomers Project (SEP)

TITLE: EPDM FACILITIES
POLY UNIT
PIPING AND INSTRUMENT DIAGRAM. FIRE PROTECTION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
0/E	EA	02200	A1

A.U.	DRAWING NO.	SHEET No.	REVISION
	EA-K-2080	001	0

FILE NAME: EA-K-2080.dgn



EA-K-2081

NOTES

GENERAL NOTES:

1. FOR SYMBOLS AND ABREVIATIONS SEE DRAWINGS 00-K-2000 TROUGH 00-K-2015.
2. FOR GENERAL FIRE PROTECTION NOTES, SEE P&ID No. EA-K-2080
3. FIRE PROTECTION SYSTEMS INSIDE FINISHING BUILDING SHALL BE BY BUILDING CONSTRUCTOR

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
Ø	Ø7-AUG-13	APPROVED FOR CONSTRUCTION	ROS/MJ		MPL

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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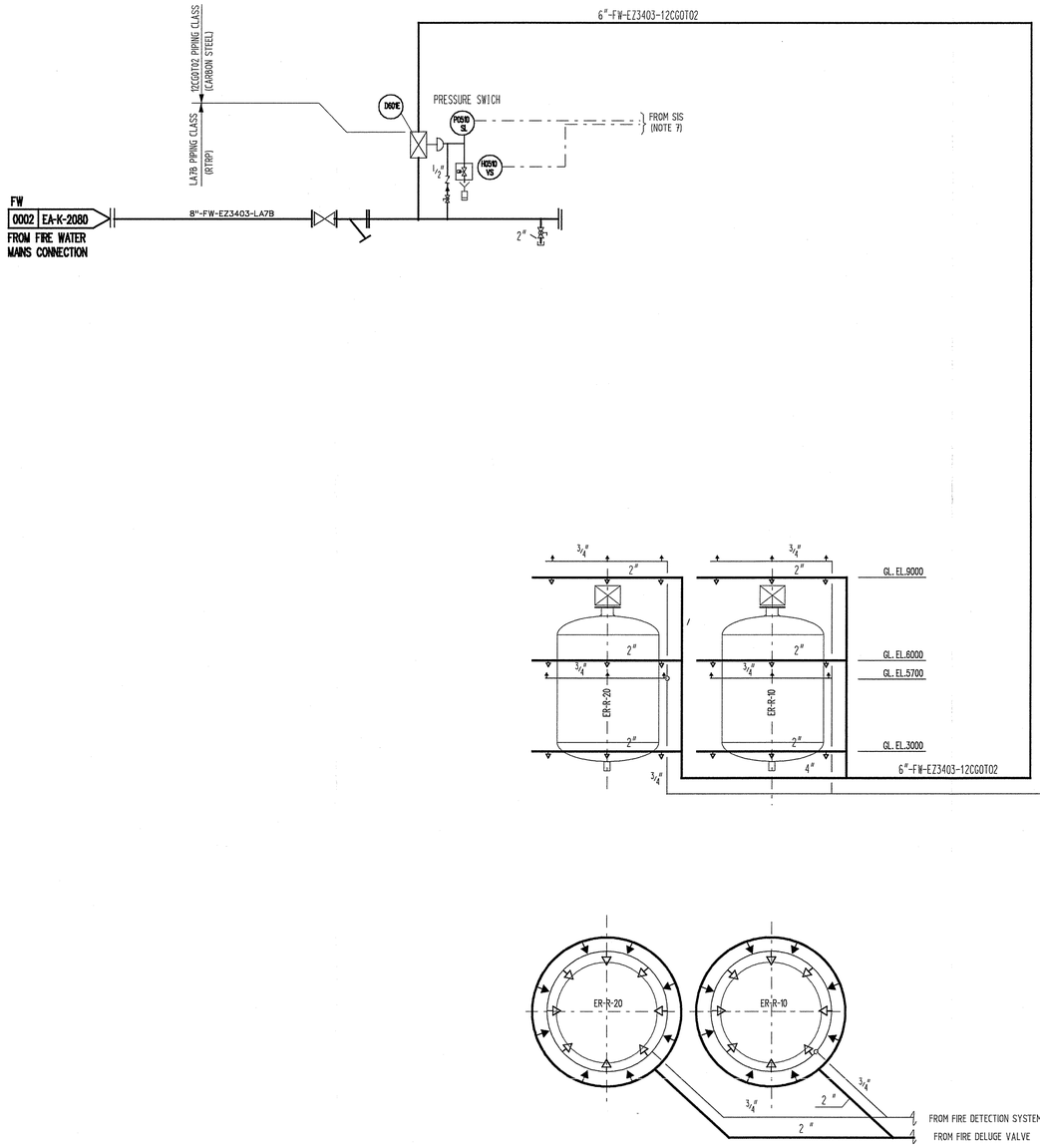
PROJECT: Saudi Elastomers Project (SEP)

TITLE: EPDM FACILITIES
F&P UNIT
PIPING AND INSTRUMENT DIAGRAM
FIRE PROTECTION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
O/E	EA	02200	A1

A.I.D.	DRAWING NO.	SHEET No.	REVISION
XX	EA-K-2081	Ø01	Ø

FILE NAME: EA-K-2081.dgn



DETAIL DELUGE SYSTEM

DISTRIBUTION NOZZLE ON EQUIPMENT

EQUIPMENT	NOZZLE	TYPE	K	ø	QUANTITY
ER-R-10	CURTAIN	BY VENDOR	BY VENDOR	1/2"	24
ER-R-20	CURTAIN	BY VENDOR	BY VENDOR	1/2"	24

NOTES

GENERAL NOTES:

1. FOR SYMBOLS AND ABREVIATIONS SEE DRAWINGS 00-K-2000 TROUGH 00-K-2015.
2. FOR GENERAL FIRE PROTECTION NOTES, SEE P&ID No. PA-K-2080
3. DELUGE VALVE SHALL BE A HYDRAUCALY-OPERATED VALVE LISTED/APPROVED FOR WATER SERVICE.
4. DELUGE VALVE SHALL BE ACCESIBLE FROM GRADE.
5. THE ENTIRE DELUGE SYSTEM DOWNSTREAM OF THE CONNECTION TO THE DISTRIBUTION PIPING, SHALL BE ABOVEGRADE.
6. DELUGE VALVE SHALL BE LOCATED A MINIMUN OF 15 m FROM THE EQUIPMENT TO BE PROTECTED.
7. INSTRUMENTS SHALL BE WIRING TO SIS, FOR DETAIL SEE P&ID. No. ER-K-2261.
8. FOR FIRE DETECTION DETAIL, SEE DRW. No. EA-F-7200.

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
Ø	07-AUG-13	APPROVED FOR CONSTRUCTION	JGS/MJ		PL

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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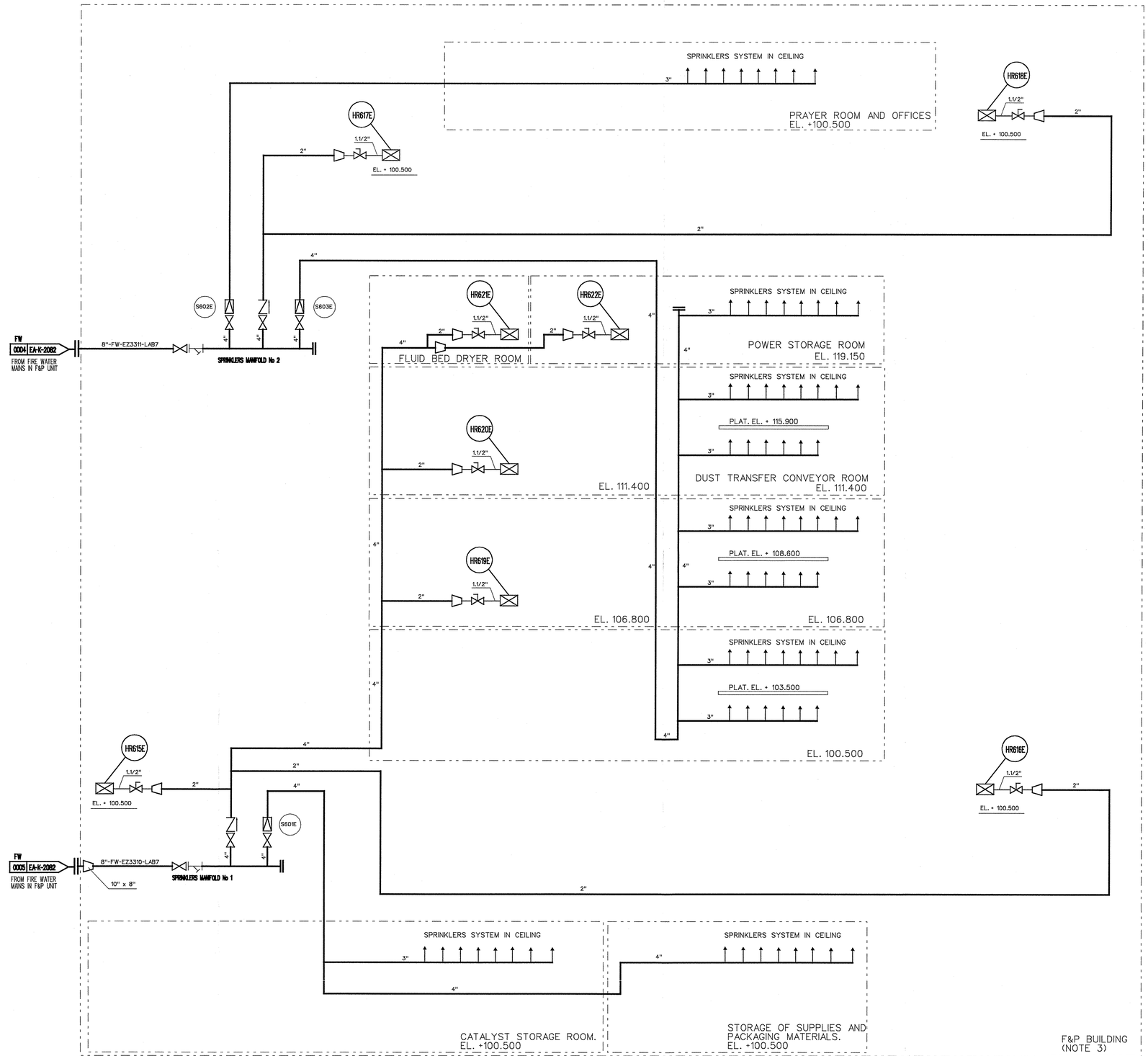
PROJECT: Saudi Elastomers Project (SEP)

TITLE: EPDM FACILITIES
POLY UNIT
PIPING AND INSTRUMENT DIAGRAM
DELUGE SYSTEM ON REACTORS

SCALE	AREA	PROJECT NUMBER	SIZE
O/E	EA	02200	A1

A.U.	DRAWING NO.	SHEET No.	REVISION
XX	EA-K-2082	001	Ø

FILE NAME: EA-K-2082.dgn



NOTES

1. FOR SYMBOLS AND ABREVIATIONS SEE DRAWINGS 00-K-2000 TROUGH 00-K-2015.
2. FOR GENERAL FIRE PROTECTION NOTES, SEE P&ID No. EA-K-2080
3. FIRE PROTECTION SYSTEMS INSIDE FINISHING BUILDING SHALL BE BY BUILDING CONSTRUCTOR.
4. F&P BUILDING SHALL BE PROTECTED BY INDOOR HOSE REELS.

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
Ø	Ø7-AUG-13	APPROVED FOR CONSTRUCTION	AMDS/AAJ		PL

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT
Saudi Elastomers Project (SEP)

TITLE
EPDM FACILITIES
PIPING AND INSTRUMENT DIAGRAM
FIRE PROTECTION SYSTEM IN F&P BUILDING

SCALE	AREA	PROJECT NUMBER	SIZE
O/E	EA	Ø2200	A1
A.U.	DRAWING NO.	SHEET No.	REVISION
XX	EA-K-2083	ØØ1	Ø

FILE NAME: EA-K-2083.dgn

EC-HST-03
Service: HOIST FOR CATALYST BOTTLES BASKET

EC-X-20
Service: CATALYST AND ACTIVATOR LOADING GLOVE BOX PACKAGE

EC-X-21
Service: CATALYST AND ACTIVATOR LOADING GLOVE BOX
SIZE (GLOVE BOX): LxDxH=1140x1520x915 mm
HOLD C

EC-D-20
Service.: CATALYST AND ACTIVATOR HOPPER
Dimension.: 340.0 mm x 500.0 mm ; CONE LENGTH: 540 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / x 90.0 C /0.0 C
Materials of Construction.: 304L S.S.
Trim.:
Insulation (type/thickness).: /

3/4"-IG-EU1110-AA1C
2679
IG
EU-K-2860
SET AT 1.4 barg
P1036 CV
P1074 G
F1082 RO
CL300
3/4"
AA1C 50ST0L87
3/4"x1/2"
SET AT 0.1 barg
P1051 CV
1/4"-IG-EC1091-50ST0L87
1/4"-IG-EC1092-50ST0L87
3/8"-IG-EC1093-50ST0L87
1/2"x1/4"
1/4"-IG-EC1094-50ST0L87
3/8"-50ST0L87
1/4"-IG-EC1162-50ST0L87
TO ATM AT SAFE LOCATION
-AV-EC1097-AA1B
HOLD 4
-AV-EC1223-AA1B
-AV-EC1224-AA1B
-AV-EC1225-AA1B
-AV-EC1226-AA1B
3/8"-P-EC1095-50ST0L87
F1001 I
EC-X-20
VENDOR
HOLD C
EC-X-21
NOTE 5
CSO
NC
OPEN
ANTECHAMBER
NOTE 9
NOTE 11
NOTE 8
SP-EC-0044
NOTES 4,7
SP-EC-0001
2"-P-EC1001-AA1B
50ST0L87 AA1B
AA1B AR5W
SP-EC-0013
SP-EC-0030
2"-P-EC1005-AR5W
SP-EC-0002
P1075 G
AR5W AA1C
SP-EU-0012
2680
IG
EU-K-2860
3/4"-IG-EU1255-AA1C
NOTE 13
SP-EU-0014
NPT
A
B
NOTE 6
EC-D-20
2"-P-EC1098-AR5W
SP-EC-0031
NOTE 4
SP-EC-0003
SEE CONTINUATION P&ID EC-K-2110A
EC-HST-03 (NOTE 15)
CHAIN HOIST
EC-HSTM-03
BASKET
SP-EC-0043
NOTE 16
EC-PM-40A
EC-PM-40B
EC-PM-40C
EC-PM-40D
1"-AV-EC1003-AA1B
1"-AV-EC1229-AA1B
1"-AV-EC1228-AA1B
1"-AV-EC1227-AA1B
SP-EC-0004
NOTE 10
EC-P-40A
EC-P-40B
EC-P-40C
EC-P-40D
EC-P-40A/ B/ C/ D
Service: CATALYST AND ACTIVATOR GLOVE BOX VACUUM PUMP
Type: Vacuum Pump (ROTARY VANE)
Capacity: HOLD 8
Differential Press.: 0.0 bar (SUC) -18.8 mmHg
Material of Construction: 304L S.S.
HOLD C

NOTES:

1. NOT USED.
2. NOT USED.
3. NOT USED.
4. REBUILDABLE QUARTER TURN VALVES. WORCESTER SERIES 59, PART NO. 5966AZ-SE OR EQUIVALENT (VALVE REPAIR KIT PART NO. PTRK59 OR EQUIVALENT).
5. GLOVE BOX MUST BE SUFFICIENTLY ELEVATED TO ALLOW ATTACHMENT OF CATALYST HOPPER UNDERNEATH. A PLATFORM FOR ACCESS TO GLOVE BOX WILL BE REQUIRED.
6. HOPPER TO ROLL ON LONG ENOUGH RAILS TO ENSURE PIPING CANNOT BE CONNECTED TO BOTH GLOVE BOX AND HOPPER AND CATALYST MIXING DRUM AT THE SAME TIME. HOPPER SIZE LARGE ENOUGH TO HOLD 24 KGS. OF CATALYST.
7. MINIMUM SPACE BETWEEN VALVES FOR PURGING.
8. FUNNEL NOT INCLUDED IN VENDOR PACKAGE.
9. WEIGHT SCALE REQUIRED IN GLOVE BOX. MAXIMUM SCALE WEIGHT TO BE 2 kg.
10. WITH OIL SEPARATOR.
11. GLOVE BOX LOCATION TO BE ENSURED TO AVOID DIRECT SUNLIGHT AND BRIGHT LIGHT.
12. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
13. LENGTH OF HOSE TO ENSURE THAT IT CANNOT BE CONNECTED TO THE HOPPER WHEN HOPPER CONNECTED TO GLOVE BOX.
14. DELETED.
15. ELECTRICAL HOIST (EC-HST-03) FOR CATALYST BOTTLES BASKET TO BE PROVIDED.
16. BASKET SIZE TO BE 1 m x 1 m x 1 m.
17. DELETED.
18. DELETED.

HOLDS:

2

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
B. DELETED. 2
C. ALL THE DETAILS REGARDING EC-X-20 TO BE CONFIRMED WITH VENDOR DURING DETAIL ENGINEERING.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	16/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RMF
1	13/09/0201	ISSUE FOR CONSTRUCTION	MCG	PSA	RMF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
CATALYST / ACTIVATOR GLOVE BOX

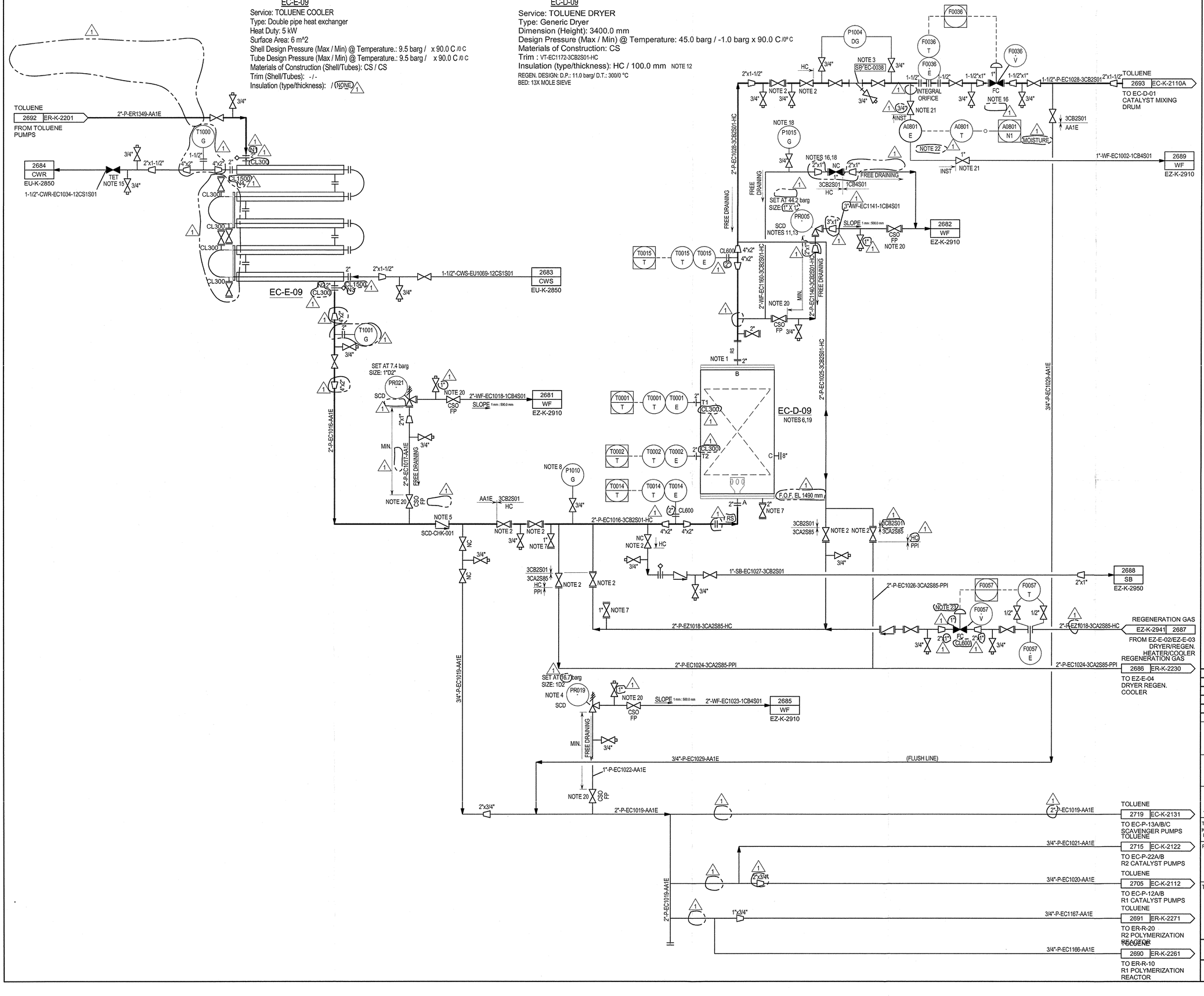
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2100	1 OF 1	2

EC-E-09

Service: TOLUENE COOLER
Type: Double pipe heat exchanger
Heat Duty: 5 kW
Surface Area: 6 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 9.5 barg / x 90.0 C /0 C
Tube Design Pressure (Max / Min) @ Temperature.: 9.5 barg / x 90.0 C /0 C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): - / -
Insulation (type/thickness): / (NONE)

EC-D-09

Service: TOLUENE DRYER
Type: Generic Dryer
Dimension (Height): 3400.0 mm
Design Pressure (Max / Min) @ Temperature: 45.0 barg / -1.0 barg x 90.0 C /0° C
Materials of Construction: CS
Trim : VT-EC1172-3CB2S01-HC
Insulation (type/thickness): HC / 100.0 mm NOTE 12
REGEN. DESIGN: D.P.: 11.0 barg/ D.T.: 300/0 °C
BED: 13X MOLE SIEVE



NOTES:

1. BREAK OUT SPOOL FOR DESICCANT LOADING.
2. ALL VALVES ASSOCIATED WITH THE DRYER REGEN SYSTEM SHOULD BE LOCATED AT GRADE IN AN ERGONOMIC ARRANGEMENT.
3. 100 MESH SCREEN.
4. EC-PR-019 PROVIDED FOR OVERPRESSURE PROTECTION FROM BACKFLOW FROM CATALYST PUMPS.
5. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN RELIEF VALVE SIZING.
6. LOCATE TOLUENE DRYER AS CLOSE AS POSSIBLE TO DRYER REGENERATION ELECTRIC HEATER EZ-E-02.
7. STEAM CONNECTION FOR DESICCANT DEACTIVATION.
8. PRESSURE GAUGE MUST BE VISIBLE FROM REGENERATION PIPING MANIFOLD.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
10. NOT USED.
11. RUPTURE PIN VALVE.
12. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL".
13. SET PRESSURE TO BE ADJUSTED DOWNWARD FOR AFFECT OF STATIC HEAD BETWEEN TOP OF VESSEL AND PSV LOCATION.
14. DELETED.
15. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
16. CV SHOULD NOT EXCEED 14.3 TO PREVENT BED LIFT UP.
17. DELETED.
18. PG TO BE READABLE FROM BYPASS VALVE.
19. FOR REGENERATION, HEATING IS COUNTERCURRENT TO PROCESS; COOLING IS COCURRENT TO PROCESS.
20. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
21. THREADED END VALVE.
22. ANALYZER LOCATED IN RACK EZ-AX-09 SEE DETAIL IN P&ID EZ-K-29955A.
23. CV SHOULD NOT EXCEED 14.3 TO PREVENT BED LIFT UP.

HOLDS:

1. DELETED.
2. DELETED.
53. DELETED.
54. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
CATALYST
TOLUENE PUMP, COOLER & DRYER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2102	1 OF 1	1

EC-D-10

Service.: CATALYST DRUMS JACKET WATER SURGE DRUM
Dimension.: 591.0 mm x 1300.0 mm (24" PIPE x 1300.0 mm)
Design Pressure (Max / Min) @ Temperature.: 9.0 barg / x 240.0 C
Materials of Construction.: CS
Trim.: VT-EC1173-AA1B-HC / VT-EC1178-3CB1S02-HC
Insulation (type/thickness).: HC / 90.0 mm

JACKET WATER 4125 EC-K-2110A — FROM EC-D-O1 CATALYST MIXING DRUM — 3"-JW-EC1050-AA1B-HC

JACKET WATER EC-K-2112 2706 — TO EC-P-12A/B (JACKETS) R1 CATALYST PUMPS — 1-1/2"-JW-EC1046-AA1B-HC

JACKET WATER EC-K-2122 2716 — TO EC-P-22 A/B (JACKETS) R2 CATALYST PUMPS — 1-1/2"-JW-EC1047-AA1B-HC

JACKET WATER EC-K-2110A 4124 — TO EC-D-01 CATALYST MIXING DRUM — 3"-JW-EC1055-AA1B-HC

JACKET WATER EC-K-2111 2702 — TO EC-D-12 R1 CATALYST CHARGE DRUM — 3"-JW-EC1049-AA1B-HC

JACKET WATER EC-K-2121 2711 — TO EC-D-22 R2 CATALYST CHARGER DRUM — 3"-JW-EC1048-AA1B-HC

1-1/2"-JW-EC1143-AA1B-HC — TEMPERED WATER TRACING HOLD 36

4"-JW-EC1046-AA1B-HC

4"x1-1/2"

4"-JW-EC1072-AA1B-HC

F1009 RO — TET — 1-1/2"-JW-EC1066-AA1B-HC — JACKET WATER EC-K-2112 2704 — FROM EC-P-12 A/B (JACKETS) R1 CATALYST PUMPS

F1008 RO — TET — 1-1/2"-JW-EC1077-AA1B-HC — JACKET WATER EC-K-2122 2712 — FROM EC-P-22 A/B (JACKETS) R2 CATALYST PUMPS

F1006 RO — 4"x3" — TET — 3"-JW-EC1061-AA1B-HC — JACKET WATER EC-K-2111 2701 — FROM EC-D-12 R1 CATALYST CHARGE DRUM

F1007 RO — TET — 3"-JW-EC1072-AA1B-HC — JACKET WATER EC-K-2121 2710 — FROM EC-D-22 R2 CATALYST CHARGE DRUM

F1098 RO — 1-1/2"-JW-EC1144-AA1B-HC — HOLD 36 — TEMPERED WATER TRACING

NOTE 2 — NO POCKETS — 3"-JW-EC1051-AA1B-HC — TO GRADE

P1013 G — F1010 RO — 3/4" — HC — 1-1/2"-IG-EC1030-AA1B — AA1B AA1C — 1-1/2"-IG-EU1015-AA1C — 4203 IG EU-K-2860

L0004 — 3/4" — 3" E — 4" A — 2" B — 3" C — 6" D — 2"x1-1/2" — 3"-LS-EU1057-NA1S-HC — MINIMUM 5400 mm ABOVE GRADE

CL300 L1 / L3 / L2 / L4 — L0004 T DP — L1004 G MAG — F0037 T — F0037 E — 1/2"

RTD — T0005 E — T0005 T

EC-D-10 NOTE 3

1-1/2"x1" — L0004 V — FC CL300 — 1" — 1-1/2"-IW-EC1157-AA1B-HC — HC — AA1B 12CS1S01 — 1-1/2"-IW-EL1018-12CS1S01 — FROM EL-E-03 LEAN PHASE WATER COOLER — 3230 IW EL-K-2301

3"x2" — T0005 V1 — FC CL300 — 2" — 2"-LS-EU1057-NA1S-HC — 3346 LS EU-K-2840

T0005 — T0005 Y1 — T0005 Y2 — T0005 V2 — FC CL300 — 2"x1" — 2"-CWR-EC1159-AA1B — AA1B 12CS1S01 — 2"-CWR-EC1036-12CS1S01 — 2695 CWR EU-K-2850

HC

4"-JW-EC1045-AA1B-HC

P1011 G — EC-PM-10A — M0002 — NOTE 12 — EC-P-10A — 4"x1-1/2" — 6"x3" — SP/EC-0007 — 6"-JW-EC1043-AA1B-HC — 3/4"-O-EC1180-12CS1S01 — GRADE — O

P1012 G — EC-PM-10B — M0003 — NOTE 12 — EC-P-10B — 4"x1-1/2" — 6"x3" — SP/EC-0008 — 6"-JW-EC1044-AA1B-HC — 3/4"-O-EC1181-12CS1S01 — GRADE — O

EC-P-10A/ B

Service: CATALYST DRUMS JACKET WATER PUMPS
Type: Horizontal centrifugal pump
Capacity: 45.0 m^3/hr
Differential Press.: 5.5 bar
Material of Construction: 316 S.S.
Insulation: HC

NOTES:

1. DELETED.
2. PROVIDE 6mm ANTISYPHON HOLE.
3. EC-D-10 MUST BE LOCATED SUCH THAT LIQUID LEVEL IN THE SURGE DRUM IS ABOVE THAT OF THE UPPER TANGENT LINE OF THE CATALYST MIXING DRUM TO ENSURE THE JACKETS ARE FILLED WITH WATER.
4. DELETED.
5. DELETED.
6. DELETED.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
8. DELETED.
9. DELETED.
10. DELETED.
11. DELETED.
12. MOTOR WITH START/STOP LOCAL PUSH BUTTOM.

HOLDS:

1 DELETED. (1)
3 DELETED. (1)
36. NUMBER OF VALVES TO BE DETERMINED DURING DETAIL ENGINEERING.
52. DELETED. (1)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAB
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
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Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
CATALYST DRUMS JACKET WATER SURGE DRUM

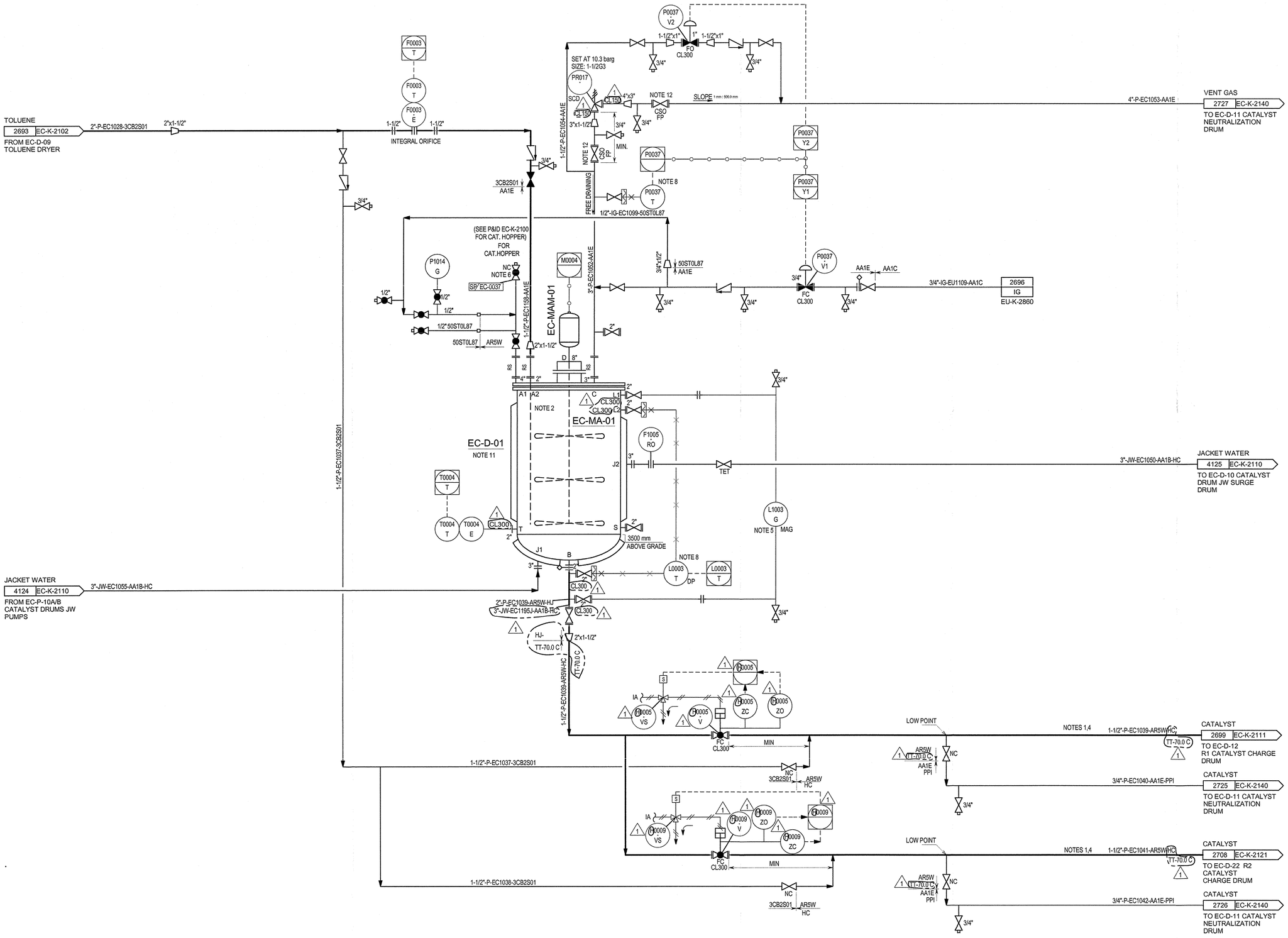
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2110	1 OF 1	1

EC-MA-01

Service: CATALYST MIXING DRUM AGITATOR
Materials of Construction: 316 S.S.
Power Requirements: 2 kW

EC-D-01

Service.: CATALYST MIXING DRUM
Dimension.: 1100.0 mm x 1800.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / -1.0 barg x 110.0 C /0.0 C
Materials of Construction.: CS
Trim.: VT-EC1174-AA1E-HC / VT-EC1179-3CB1S02-HC
Insulation (type/thickness).: HC / 90.0 mm
PLATE COIL: D.P.: 8.0 barg / D.T.: 110/0°C



NOTES:

1. PIPE LENGTH FROM EC-D-01 TO EC-D-12 & EC-D-22 MUST BE KEPT TO A MINIIMUM.
2. PROVIDE 6mm ANTISYPHON HOLE.
3. DELETED.
4. TEMPERED WATER TRACING AND INSULATION. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C AND 70°C.
5. MAGNET LEVEL GAUGE IS REQUIRED FOR LIGHT SENSITIVE CATALYST.
6. REBUILDABLE QUARTER TURN VALVE (WORCESTER SERIES 59, PART NO. 5966AZ-SE OR EQUIVALENT).
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
8. INSTRUMENT LEVEL TRANSMITTER AND PRESSURE GAUGES LOCATED AT THE TOP OF EC-D-01 VISIBLE FROM EC-D-12 AND EC-D-22.
9. DELETED.
10. DELETED.
11. LOCATE TOLUENE PUMP STOP SWITCH AT GRADE NEAR EC-D-01.
12. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
CATALYST MIXING DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

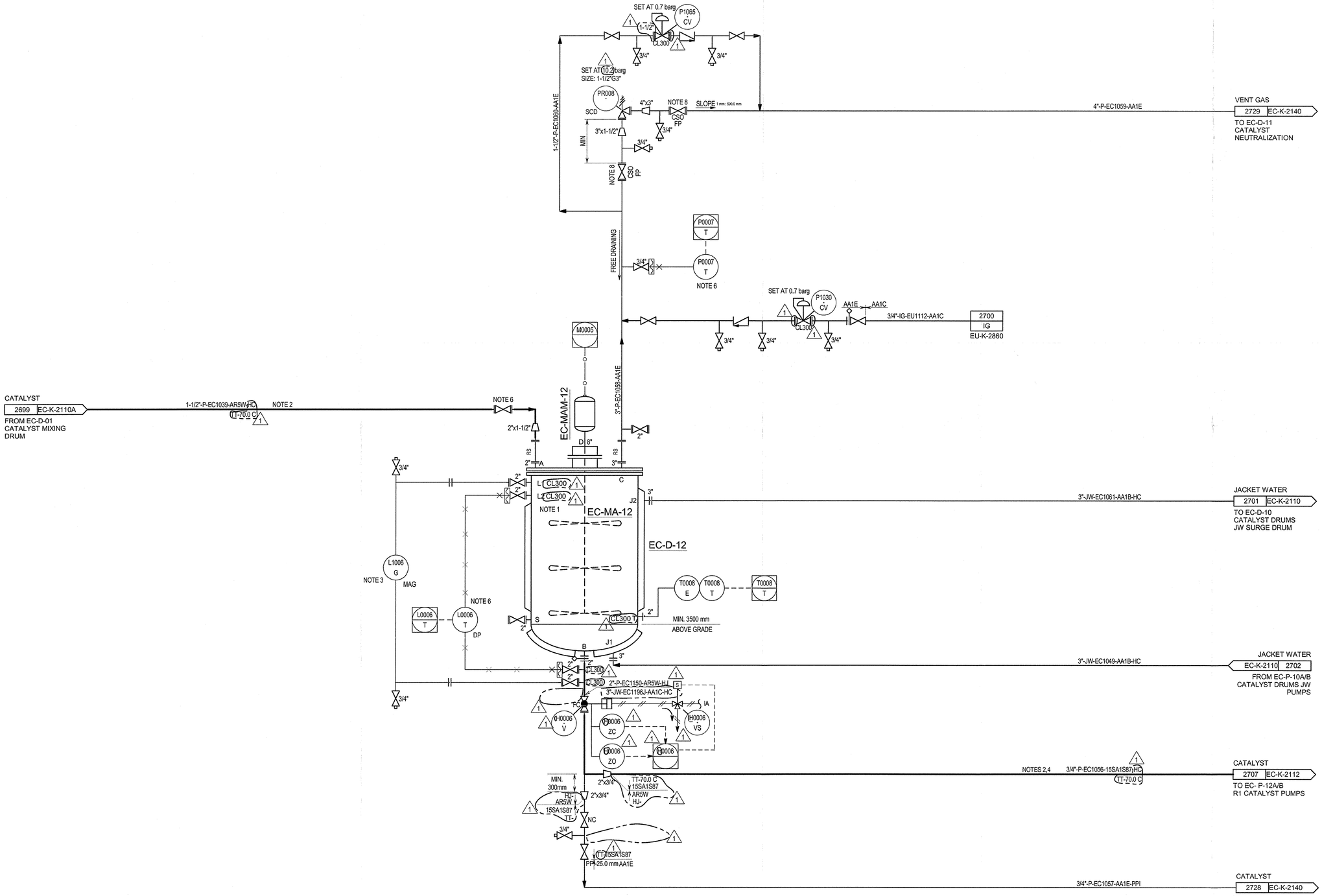
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2110A	1 OF 1	1

EC-MA-12

Service: R1 CATALYST CHARGE DRUM AGITATOR
Materials of Construction: 316 S.S.
Power Requirements: 2 kW

EC-D-12

Service.: R1 CATALYST CHARGE DRUM
Dimension.: 1100.0 mm x 1800.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / -1.0 barg x 110.0 C /0.0 C
Materials of Construction.: CS
Trim.: VT-EC1175-AA1E-HC / VT-EC1192-3CB1S02-HC
Insulation (type/thickness).: HC / 90.0 mm
PLATE COIL: D.P.: 8.0 barg / D.T.: 110/0°C



NOTES:

1. PROVIDE 6mm ANTISYPHON HOLE.
2. TEMPERED WATER TRACING AND INSULATION. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C AND 70°C.
3. MAGNETIC LEVEL GAUGE IS REQUIRED FOR LIGHT SENSITIVE CATALYST.
4. PIPE LENGTHS FROM EC-D-12 TO EC-P-12A/B MUST BE KEPT TO A MINIMUM.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
6. INSTRUMENT LEVEL TRANSMITTER AND PRESSURE GAUGES LOCATED AT THE TOP OF EC-D-12 VISIBLE FROM INLET BLOCK VALVE.
7. DELETED.
8. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

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1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM & PBR FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
R1 CATALYST CHARGE DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-		02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2111		1

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CATALYST
2707 EC-K-2111
FROM EC-D-12
R1 CATALYST
CHARGE DRUM

TOLUENE
2705 EC-K-2102
FROM EC-D-09
TOLUENE DRYER

JACKET WATER
2706 EC-K-2110
FROM EC-P-10A/B
CATALYST DRUMS
JW PUMPS

3/4"-P-EC1056-15SA1S87-HC
1-1/2"-JW-EC1046-AA1B-HC
3/4"-P-EC1020-AA1E
1-1/2"-JW-EC1064-AA1B-HC
3/4"-P-EC1063-AA1E
1/4"-P-EC1100-50ST0L87-HC
3/4"-P-EC1062-15SA1S87-HC
1/4"-P-EC1103-50ST0L87
1/4"-P-EC1104-50ST0L87-HC
1/4"-P-EC1105-50ST0L87-HC
1/4"-P-EC1107-50ST0L87
1/4"-P-EC1108-50ST0L87
1/4"-P-EC1109-50ST0L87
1/2"-P-EC1102-50ST0L87-HC
1/2"-P-EC1106-50ST0L87-HC
1/4"-P-EC1101-50ST0L87-HC
1/2"-P-EC1152-50ST0L87-HC
1/2"-P-EC1153-50ST0L87-HC
1/2"-P-EC1032-50ST0L87
1-1/2"-JW-EC1066-AA1B-HC
1-1/2"-JW-EC1065-AA1B-HC
3/4"-O-EC1182-12CS1S01
3/4"-O-EC1183-12CS1S01

CATALYST
2703 ER-K-2261
TO ER-R-10
R1 POLYMERIZATION
REACTOR

CATALYST
2735 EC-K-2140
TO EC-D-11
CATALYST
NEUTRALIZATION

JACKET WATER
EC-K-2110 2704
TO EC-D-10
CATALYST DRUMS
JW SURGE DRUM

EC-P-12A/ B
Service: R1 CATALYST PUMPS
Type: Diaphragm pump
Capacity: 0.1 m^3/hr
Differential Press.: 124.0 bar
Material of Construction: 316 S.S.
Jacket: D.P.: 8.0 barg / D.T.: 110/0 °C
Insulation: HC

NOTES:

1. SWAGELOK R3A MODEL OR EQUIVALENT.
2. SWAGELOK 8F-KY-230 MODEL OR EQUIVALENT.
3. TEMPERED WATER TRACING AND INSULATION. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C AND 70°C.
4. CHECK VALVE ARE SAFETY CRITICAL TO MINIMIZE BACKFLOW FOR SIZING OF EC-PR-019.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
6. DELETED.
7. SIGHT GLASS TO BE INSTALLED IN SAME AREA AS SUCTION MANUAL BLOCKS.
8. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN EC-PR-008 RELIEF VALVE SIZING.
9. SIGHT GLASS TO BE MOUNTED 0.5 M ABOVE PUMP.
10. MOTOR WITH START/STOP LOCAL PUSH BUTTOM.

HOLDS:

2, DELETED.
54, DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
R1 CATALYST PUMPS

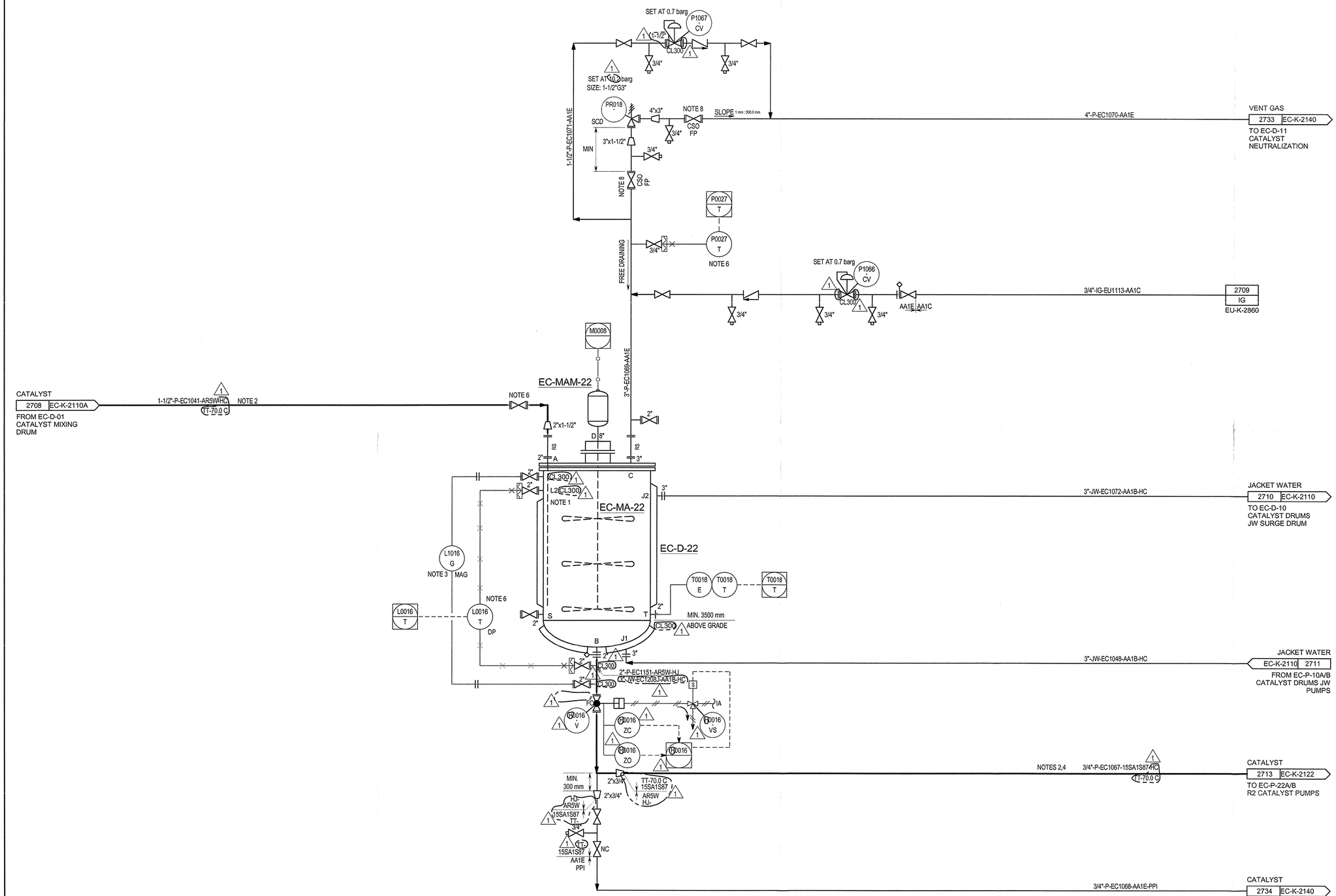
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2112	1 OF 1	1

EC-MA-22

Service: R2 CATALYST CHARGE DRUM AGITATOR
Materials of Construction: 316 S.S.
Power Requirements: 2 kW

EC-D-22

Service.: R2 CATALYST CHARGE DRUM
Dimension.: 1100.0 mm x 1800.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / -1.0 barg x 110.0 C /0.0 C
Materials of Construction.: CS
Trim.: VT-EC1176-AA1E-HC / VT-EC1193-3CB1S02-HC
Insulation (type/thickness).: HC / 90.0 mm
Plate Coil: D.P.: 8.0 barg / D.T.: 110/0°C



NOTES:

1. PROVIDE 6mm ANTISYPHON HOLE.
2. TEMPERED WATER TRACING AND INSULATION. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C AND 70°C.
3. MAGNETIC LEVEL GAUGE IS REQUIRED FOR LIGHT SENSITIVE CATALYST.
4. PIPE LENGTHS FROM EC-D-22 TO EC-P-22A/B MUST BE KEPT TO A MINIMUM.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
6. INSTRUMENT LEVEL TRANSMITTER AND PRESSURE GAUGES LOCATED AT THE TOP OF EC-D-22 VISIBLE FROM INLET BLOCK VALVE.
7. DELETED.
8. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

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C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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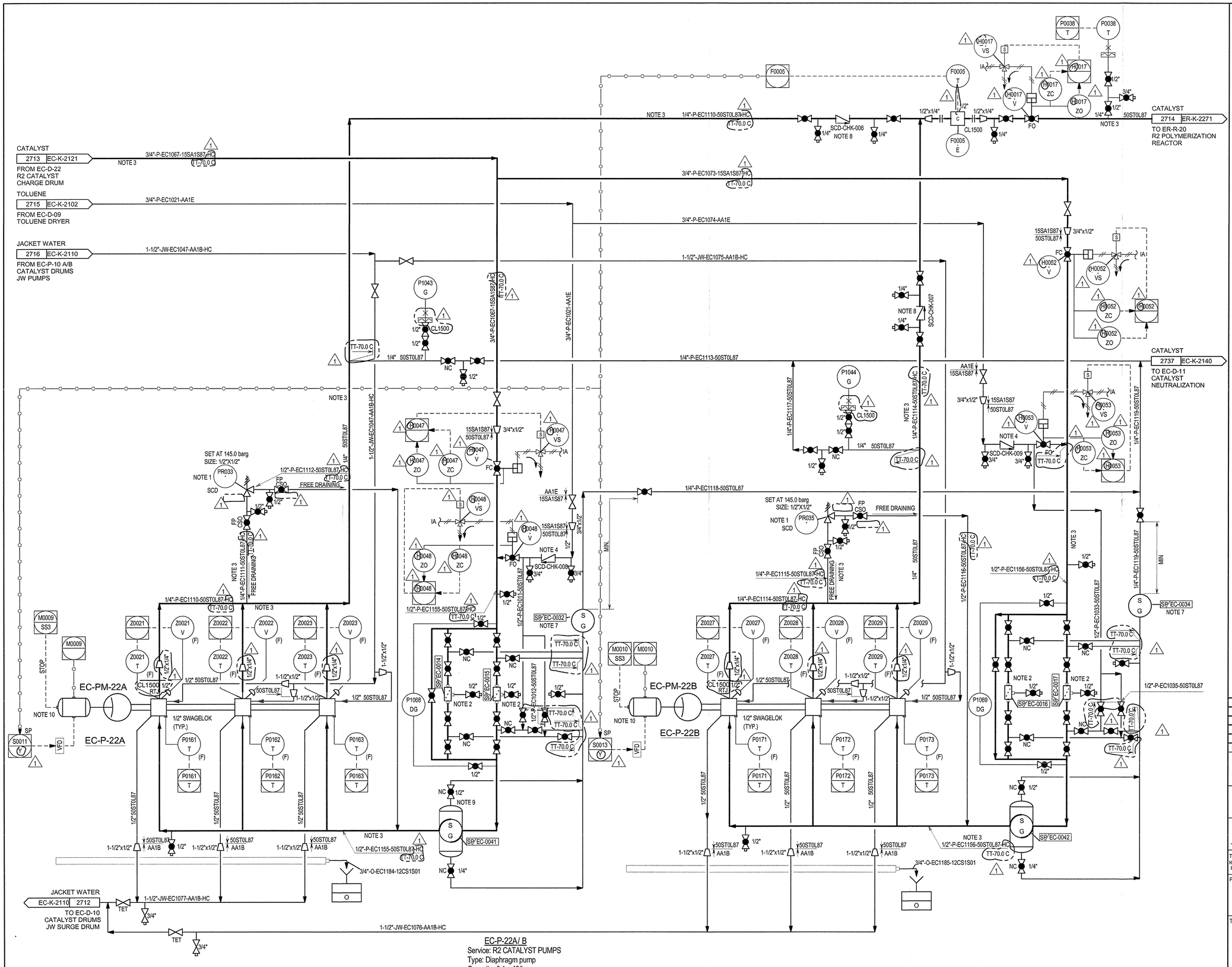
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
R2 CATALYST CHARGE DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2121	1 OF 1	1



NOTES:

1. SWAGELOK R3A MODEL OR EQUIVALENT.
2. SWAGELOK 8F-KY-230 MODEL OR EQUIVALENT.
3. TEMPERED WATER TRACING AND INSULATION. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C AND 70°C.
4. CHECK VALVE ARE SAFETY CRITICAL TO MINIMIZE BACKFLOW FOR SIZING OF EC-PR-019.
5. INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
6. DELETED.
7. SIGHT GLASS TO BE INSTALLED IN SAME AREA AS SUCTION MANUAL BLOCKS.
8. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN EC-PR-018 RELIEF VALVE SIZING.
9. SIGHT GLASS TO BE MOUNTED 0.5 m ABOVE PUMP.
10. MOTOR WITH START/STOP LOCAL PUSH BUTTOM.

HOLDS:

2. DELETED.
5. DELETED.

EC-P-22A/ B
Service: R2 CATALYST PUMPS
Type: Diaphragm pump
Capacity: 0.1 m^3/hr
Differential Press.: 123.1 bar
Material of Construction: 316 S.S.
JACKET: D.P.: 8.0 barg / D.T.: 110/0 °C
Insulation: HC

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PROJECT:
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EPDM FACILITIES

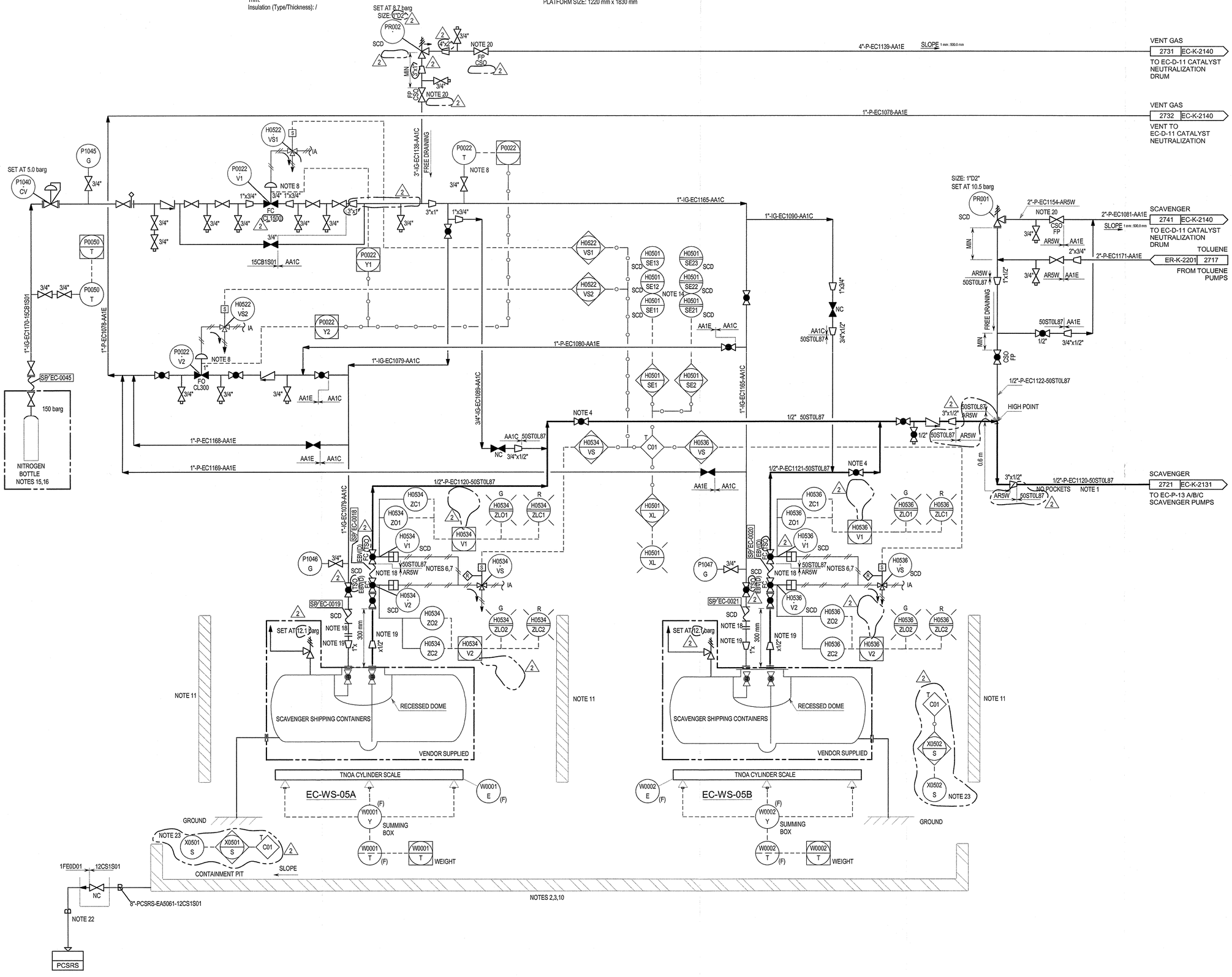
TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
R2 CATALYST PUMPS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2122	1 OF 1	1

Service: Scavenger Shipping containers
Dimension: 1.635 m3 (Capacity)
Design Pressure (Max/Min) @ Temperature: 11.0/- x 90C
Material of Construction:
Trim:
Insulation (Type/Thickness): /

EC-WS-05A/ B

Service: SCAVENGER TANK WEIGH SCALES
RANGE: 0 ~ 3000 kg
PLATFORM SIZE: 1220 mm x 1830 mm



NOTES:

1. SCAVENGER PIPING DESIGNED WITH A SINGLE HIGH POINT IN SYSTEM SUCH THAT ALL PIPING DRAINS EITHER TO THE PUMP SUCTION OR THE STORAGE TANK.
2. LOCATE STORAGE AREA AT PERIPHERY OF THE POLYMERIZATION BLOCK REMOTE FROM OTHER EQUIPMENT.
3. PROVIDE CONCRETE PAD WITH WALLS ON THREE SIDES TO CONTAIN WEIGH SCALES WITH TANKS. PAD SHOULD BE SLOPED TO DRAIN LEAKS SPILLS TO OPEN, SAFE AREA.
4. MINIMUM DISTANCE FROM SCAVENGER STORAGE TANK TO BLOCK VALVE.
5. DELETED.
6. FIRE MELT TUBING REQUIRED FOR AIR SUPPLY OF EBV TO BE WOUND AROUND THE ENTIRE LENGTH OF THE FLEXIBLE HOSES.
7. VALVES V1 & V2 SHARE COMMON SOLENOID OUTPUT.
8. PI TO BE READABLE FROM ASSOCIATED PV.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
10. CAPACITY OF DIKE TO BE DETERMINED BASED ON SPILL OF ONE CONTAINER.
11. TO PREVENT THE DAMAGE OF OTHER EQUIPMENTS BY POTENTIAL FIRE. WALL HEIGHT TO BE MINIMUM 2.2m.
12. DELETED.
13. DELETED.
14. ONE PUSH BUTTON LOCATED IN A FIELD PANEL AT LEAST 12m FROM THE TNOA STORAGE AREA. ONE PUSH BUTTON LOCATED ON OPERATOR CONSOLE IN CONTROL ROOM.
15. DRY NITROGEN MANIFOLDED CYLINDER PACK.
16. PLOT SPACE FOR THE SECOND MANIFOLDED PACK TO BE PROVIDED.
17. DELETED.
18. LENGTH TO BE 1.0 m.
19. WHEN NOT IN USE THE FACILITY BETWEEN THE HOSE AND THE SCAVENGER SHIPPING CONTAINER SHOULD BE PROVIDED WITH SUPPORT ARRANGEMENT.
20. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
21. DEGASSING CHAMBER PROVIDED FOR NOT INTERRUPTING THE TNOA FLOW TO THE PUMPS DURING THE SWITCHING OVER TO THE SECOND CONTAINER.
22. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWINGS.
23. GROUNDING CONNECTION IS PERMISSIVE TO OPEN THE DISCHARGE VALVES. 2

HOLDS:

1. DELETED.
2. DELETED. 2
3. DELETED.
10. DELETED.
37. DELETED.
53. DELETED. 2
54. DELETED. 2

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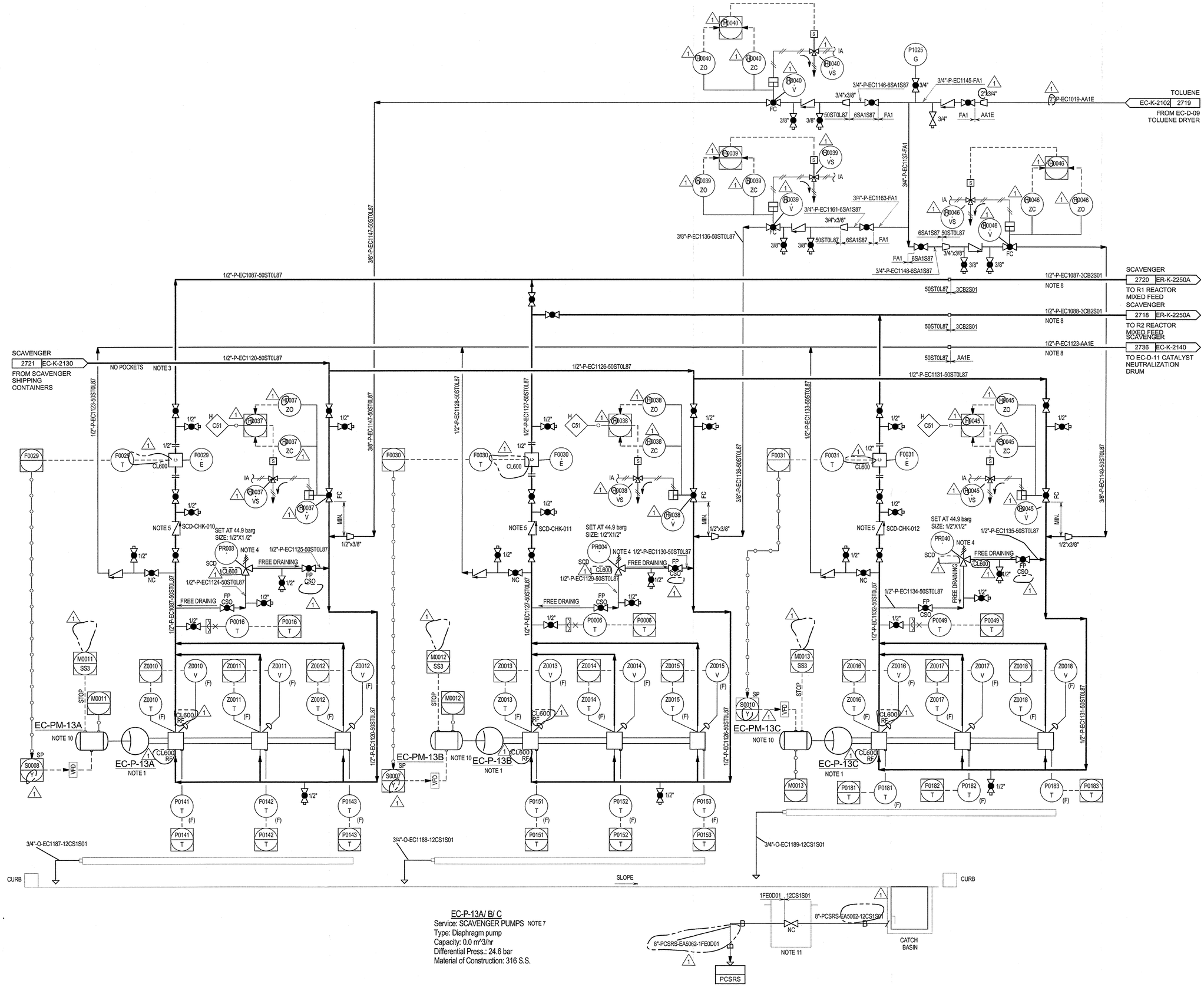
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
TNOA SCAVENGER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2130	1 OF 1	2



EC-P-13A/ B/ C
Service: SCAVENGER PUMPS NOTE 7
Type: Diaphragm pump
Capacity: 0.0 m^3/hr
Differential Press.: 24.6 bar
Material of Construction: 316 S.S.

NOTES:

1. LOCATE STORAGE AREA AT PERIPHERY OF THE POLYMERIZATION BLOCK REMOTE FROM OTHER EQUIPMENT.
2. NOT USED.
3. SCAVENGER PIPING DESIGNED WITH A SINGLE HIGH POINT IN SYSTEM SUCH THAT ALL PIPING DRAINS EITHER TO THE PUMP SUCTION OR THE STORAGE TANK.
4. SWAGELOK R3A OR EQUIVALENT.
5. CHECK VALVES ARE SAFETY CRITICAL TO MINIMIZE BACKFLOW FOR RELIEF VALVE SIZING OF EC-PR-001 ON P&ID EC-K-2130.
6. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
7. EC-P-13B IS COMMON SPARE.
   EC-P-13A IS DEDICATED FOR R1 REACTOR.
   EC-P-13C IS DEDICATED FOR R2 REACTOR.
8. PROVIDE HARD PIPING INSTEAD OF TUBING ON THE PIPERACK TO MINIMIZE TUBE LEAKING.
9. DELETED.
10. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
11. UNDERGROUND DRAIN FINAL DETAILS SHOWN CIVIL DRAWING.

HOLDS:

2 DELETED.
54 DELETED.

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C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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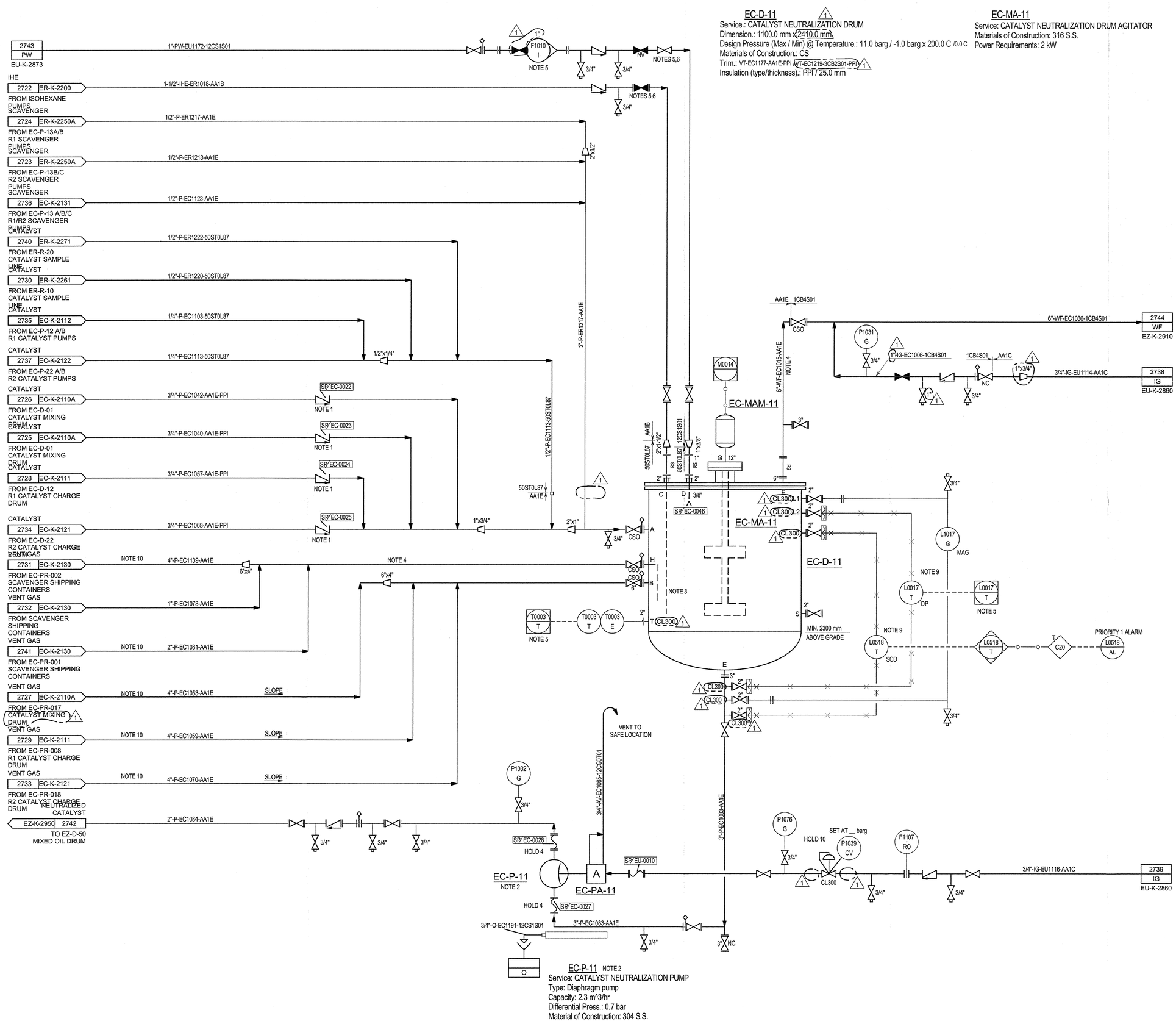
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
TNOA SCAVENGER PUMPS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2131	1 OF 1	1



NOTES:

1. CHECK VALVES TO BE SWING TYPE WITH NO EXTERNAL DAMPENING.
2. WAREHOUSE SPARE REQUIRED.
3. PROVIDE 7mm ANTISYPHON HOLE ON ISOHEXANE DIP.
4. SCAVENGER SHIPPING CONTAINER VENT LINE TO BE ELEVATED ABOVE LINE TO WET FLARE TO AVOID BACKFLOW OF LIQUIDS TO SCAVENGER SHIPPING CONTAINERS IN THE EVENT OF AN OVERFILL SCENARIO.
5. EC-F1010-I, EC-T0003-T, AND EC-L0017-T TO BE READABLE FROM PROCESS WATER. NEEDLE VALVE AND ISOHEXANE VALVE FOR MANUAL NEUTRALIZATION PROCEDURE. LOCAL INDICATION TO BE ON THE GROUND LEVEL FOR TEMPERATURE AND LEVEL.
6. VALVES ASSOCIATED WITH NEUTRALIZATION OPERATION TO BE ACCESSIBLE AND LOCATED IN AN ERGONOMIC ARRANGEMENT.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH EC UNLESS OTHERWISE STATED.
8. DELETED.
9. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
10. PRV DISCHARGE LINE PIPE CONNECTION TO CATLYST NEUTRALIZATION DRUM HEADER SHALL BE DONE AT 45º IN THE HEADER FLOW DIRECTION,

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
10. SET PRESSURE TO BE DEFINED DURING DETAIL ENGINEERING.

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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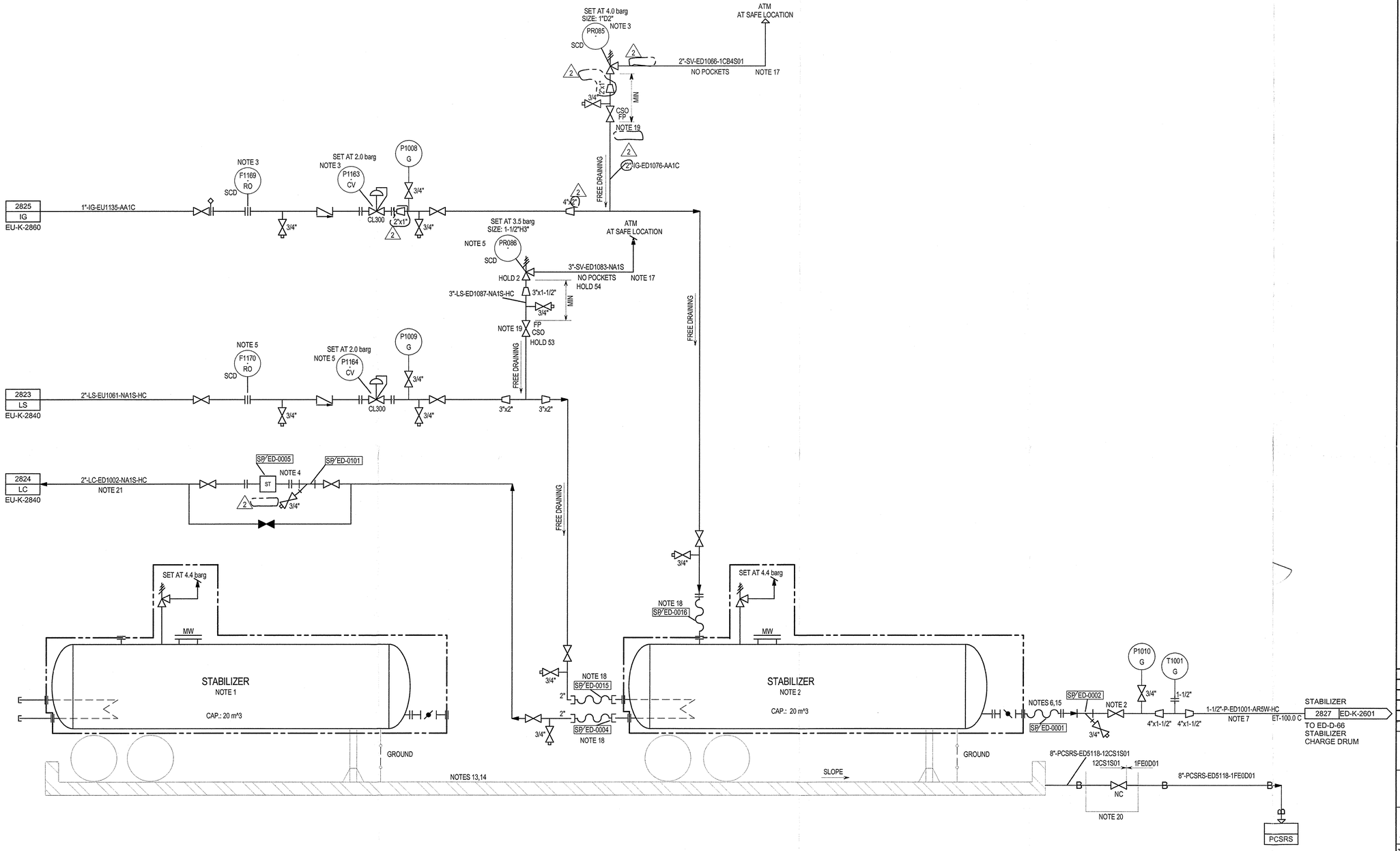
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
CATALYST
CATALYST NEUTRALIZATION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EC-K-2140	1 OF 1	1

Service : STABILIZER ISOCONTAINER
Dimension : 20 m3 (CAPACITY)
Design Pressure (Max/Min) @ Temperature : 4.4 / - barg x 150 °C/0°C
Materials of Construction :
Trim :
Insulation (type/thickness) :



NOTES:

1. TO BE SHOWN AS A SPARE.
2. TEMPERATURE OF ISO-CONTAINER AND TRANSFER LINES TO BE MAINTAINED AT 80°C AND NOT TO EXCEED 120°C.
3. COORDINATE ED-P1163-CV AND ED-F1169-RO SIZING WITH ED-PR-085 SIZING.
   ED-P1163-CV VALVE COEFFICIENT NOT TO EXCEED 0.93 (2)
   ED-F1169-RO DIAMETER NOT TO EXCEED 2.2 mm.
4. PROVIDE PUMPING STEAM TRAP IF REQUIRED.
5. COORDINATE ED-P1164-CV AND ED-F1170-RO SIZING WITH ED-PR-086 SIZING.
   ED-P1164-CV VALVE COEFFICIENT NOT TO EXCEED 50.
   ED-F1170-RO DIAMETER NOT TO EXCEED 20 mm.
6. HOSE LENGTH TO BE MINIMIZED.
7. DUAL ELECTRICAL HEAT TRACING TO BE PROVIDED ON ALL STABILIZER LINES AND DRUM TO PROVIDE REDUNDANCY. LOCAL CONTROL FOR ELECTRICAL TRACING TO BE LOCATED FOR EASY VISIBILITY AND ACCESSIBLE FOR OPERATION.
8. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
9. DELETED.
10. DELETED.
11. DELETED.
12. DELETED.
13. DIKE TO BE DESIGNED FOR CONTAINING OF VOLUME OF ONE ISO-CONTAINER.
14. ONE SIDE OF DIKE CURB SHOULD HAVE HUMP TO ALLOW CHANGE OUT OF ISO-CONTAINER.
15. HOSE TO BE ELECTRIC TRACED.
16. DELETED.
17. 3/4" WEEP HOLE AT LOW POINT OF OUTLET PIPING.
18. HOSE CONNECTIONS TO HAVE ENOUGH LENGH TO BE SHARED BY BOTH STABILIZER SHIPPING CONTAINERS.
19. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
20. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWINGS.
21. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.

HOLDS:

2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
3. DELETED.
4. DELETED.
10. DELETED. (2)
15. DELETED. (2)
16. DELETED.
53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
STABILIZER SHIPPING CONTAINERS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ED-K-2600	1 OF 1	2

ED-D-66

Service.: STABILIZER CHARGE DRUM
Dimension.: 1500.0 mm x 2400.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / x 150.0 C /0 °C
Materials of Construction.: 304 S.S.
Trim.: VT-ED1300-AR5W-HC
Insulation (type/thickness).: ET /
Capacity: 5.1 m3

ED-MA-66

Service: STABILIZER CHARGE DRUM AGITATOR
Materials of Construction: 304 S.S.
Power Requirements: 4 kW

STABILIZER 2827 ED-K-2600 FROM STABILIZER SHIPPING CONTAINERS
1-1/2"-P-ED1001-AR5W-HC ET-100.0 C
NOTE 9
NC
FC CL300 Min.
NOTE 7
M0037
ED-MAM-66
FREE DRAINING
3"-P-ED1012-AR5W-HC ET-120.0 C
SET AT 10.3 barg SIZE 1-1/2"G3"
PR087 SCD
4"x3" HC
4"-SV-ED1013-AR5W NO POCKETS
ATM AT SAFE LOCATION
NOTE 11
MIN 3/4"
3"x1-1/2" RP CSO
NOTE 14
P0094 T
3/4"
HC
SET AT 1.1 barg
P1026 CV
1/2" 1"x1/2" CL300
1"-AV-ED1014-AR5W
ATM AT SAFE LOCATION
NOTE 11
3/4"-IG-ED1166-AR5W-HC ET-120.0 C
HC
SET AT 1.0 barg
P1070 CV
3/4" CL300
3/4" 3/4"
AR5W AA1C
3/4"-IG-EU1134-AA1C
2826 IG EU-K-2860
H0048 ZO
H0048 ZC
H0048 VS
H0048 V
IA
S
2"x1-1/2"
4" 2" A B 12" C 3" 2" REDUCING FLANGE 10"x2" E 10"
G
3/4"
2" NOTE 8 L2 CL300
NOTE 8 3" L4 CL300
ED-MA-66
NOTE 1
NOTE 2
F 2" 2"x3/4" 3/4"x1/2" 1/2"
AR5W 50ST0L87
1/2"-P-ED1167-50ST0L87-HC ET-100.0 C
STABILIZER ED-K-2620 2852 FROM ED-DL-01 INLET
3/4"-P-ED1018-AR5W-HC ET-100.0 C
L0030
L1030 G NOTE 8 MAG
L0030 T DP
CL300 NOTE 8 L3
CL300 NOTE 8 L1
ED-D-66
D U
3/4"
2"
NOTE 2
T0030 T
T0030 E RTD
24" MW
2250 mm ABOVE GRADE
F0033 T
F0033 E
1/2" C CL300
SET AT 2.1 barg NOTE 5 P1022 CV
1/2"-P-ED1015-50ST0L87-HC ET-100.0 C
STABILIZER 2851 ED-K-2620 TO ED-DL-01 DEVOLATILIZER
SP S0013 Y
SP S0014 Y
VFD
2"x1-1/2"
NC
1-1/2"-P-ED1007-AR5W-HC ET-100.0 C
1-1/2"-P-ED1003-AR5W-HC ET-100.0 C
AR5W 3SA0S01
SIZE: 1"D2" SET AT 18.0 barg
PR091 SCD
1 mm : 500.0 mm SLOPE
NOTE 14
CSO FP
2"-P-ED1004-3SA0S01-HC ET-100.0 C
1-1/2"x1"
3/4"
1-1/2"-P-ED1005-3SA0S01-HC ET-100.0 C
FREE DRAINING
1-1/2"-P-ED1026-3SA0S01-HC ET-100.0 C
1-1/2"x1/2" 50ST0L87 3SA0S01
P1035 G
1/2"
ED-PM-66A
NOTE 13
NOTE 6
M0001
HOLD 4
1-1/2"-P-ED1027-3SA0S01-HC ET-100.0 C
3/4"-O-ED1128-12CS1S01
ED-P-66A
2"-P-ED1008-3SA0S01-HC ET-100.0 C
SIZE: 1"D2" SET AT 18.0 barg
PR092 SCD
1 mm : 500.0 mm SLOPE
NOTE 14
CSO FP
1-1/2"-P-ED1009-3SA0S01-HC ET-100.0 C
1-1/2"x1"
3/4"
1-1/2"-P-ED1038-3SA0S01-HC ET-100.0 C
1-1/2"x1/2" 50ST0L87 3SA0S01
P1036 G
1/2"
ED-PM-66B
NOTE 13
NOTE 6
M0002
HOLD 4
1-1/2"-P-ED1016-3SA0S01-HC ET-100.0 C
3/4"-O-ED1129-12CS1S01
ED-P-66B
1/2"-P-ED1101-50ST0L87-HC ET-100.0 C

ED-P-66A / B
Service: STABILIZER INJECTION PUMPS
Type: Positive displacement pump
NOTE 12 Capacity: 10.0 m^3/hr
Differential Press.: 1.6 bar
Material of Construction: 316 SS

NOTES:

1. VESSEL TO BE ELECTRICALLY TRACED.
2. ELECTRICAL TRACING WITH TEMPERATURE CONTROL.
3. DUAL ELECTRICAL HEAT TRACING TO BE PROVIDED ON ALL STABILIZER LINES AND DRUM TO PROVIDE REDUNDANCY. LOCAL CONTROL FOR ELECTRICAL TRACING TO BE LOCATED FOR EASY VISIBILITY AND ACCESSIBLE FOR OPERATION.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
5. BACK PRESSURE VALVE TO BE INSTALLED AS CLOSE AS POSSIBLE TO INJECTION POINT.
6. VFD MOTOR.
7. MOTOR POWER INDICATION NEEDED AT OPERATOR CONSOLE.
8. LEVEL INSTRUMENT NOZZLES AND LEVEL GAUGE TO BE ELECTIC TRACED.
9. HIGH LEVEL CUT OFF.
10. DELETED.
11. 3/4" WEEP HOLE AT LOW POINT OF OUTLET PIPING.
12. STABILIZER INJECTION PUMP CAPACITY, 0.029 m3/h.
13. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
14. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

1 — SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
53. DELETED. 1
54. DELETED. 1

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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

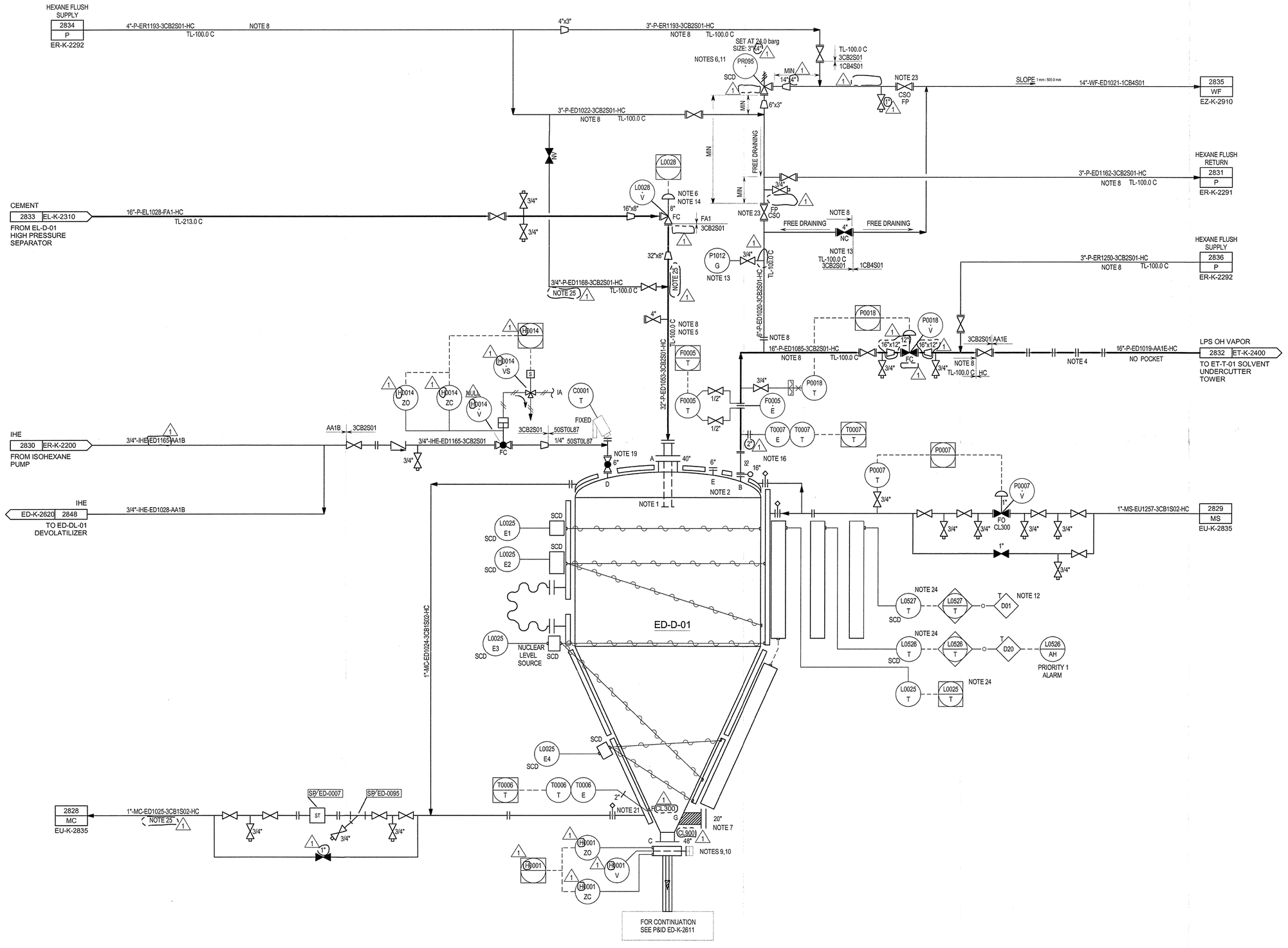
TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
STABILIZER CHARGE DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2601	1 OF 1	1

ED-D-01

Service.: LOW PRESSURE SEPARATOR
Dimension.: 4000.0 mm x 5700.0 mm
Design Pressure (Max / Min) @ Temperature.: 31.0 barg / x 225.0 C / 0 °C
NOTE 22 Materials of Construction.: CS
Trim.: VT-ED1301-3CB2S01-HC / VT-ED1310-3CB1S02-HC (1)
Insulation (type/thickness).: / FIRE RESISTANT NOTE 3
PLATE COIL: D.P.: 17.0 barg/-1.013 barg/ D.T.: 315/0 °C



NOTES:

1. INTERNAL INLET NOZZLE SHALL EXTEND INTO VESSEL.
2. STEAM JACKET/PLATE COILS ON SIDES, CONE, AND ELLIPTICAL TOP.
3. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
4. PROVIDE BREAK-OUT FLANGES FOR PIPE CLEANING EVERY 12m.
5. THIS SECTION OF PIPE NEEDS TO BE REMOVABLE FOR VESSEL ENTRY VIA TOP NOZZLE.
6. COORDINATE ED-L0028-V SIZING WITH ED-PR-095 SIZING AND ET-PR-003. PROVIDE A SIGN FOR THE CONTROL VALVE TO WARN AGAINST INCREASING THE VALVE CV WITHOUT CHANGING DOWNSTREAM RELIEVING SYSTEM. ED-L0028-V VALVE COEFFICIENT NOT TO EXCEED 100.
7. FLUSH PLUG INTO NOZZLE.
8. MILD TRACING: NOT TO EXCEED 100°C. (1)
9. VALVE ED-V0001-V STEAM TRACED WITH MP STEAM.
10. PROVIDE ACCESS TO LOCAL PNEUMATICALLY OPERATED MOTOR FOR VALVE OPERATION.
11. SET PRESSURE OF ED-PR-095 IS SET AT 24 barg TO MAINTAIN PRESSURE BELOW CRITICAL VALUE TO AVOID THE NEED FOR DEPRESSURING IN FIRE EMERGENCY.
12. HIGH LEVEL TO CLOSE FEED TO LOW PRESSURE SEPARATOR.
13. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS VALVE.
14. LEVEL INPUT CALCULATED FROM HIGH PRESSURE SEPARATOR, NUCLEAR LEVEL MEASUREMENT.
15. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
16. DESIGN SUPPORTS FOR LIQUID FULL CONTINGENCY WITH FLUID DENSITY 700 kg/m^3.
17. DELETED. (1)
18. DELETED.
19. CAMERA SIGHT GLASS FLUSH.
20. DELETED.
21. REQUIRED INSERTION DEPHT FOR TEMPERATURE ELEMENT: 3" FROM THE WALL OF VESSEL.
22. ELECTROLESS NICKEL WITH PFA COATING.
23. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
24. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
25. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. (1)

HOLDS:

1. DELETED.
2. DELETED.
3. DELETED. (1)

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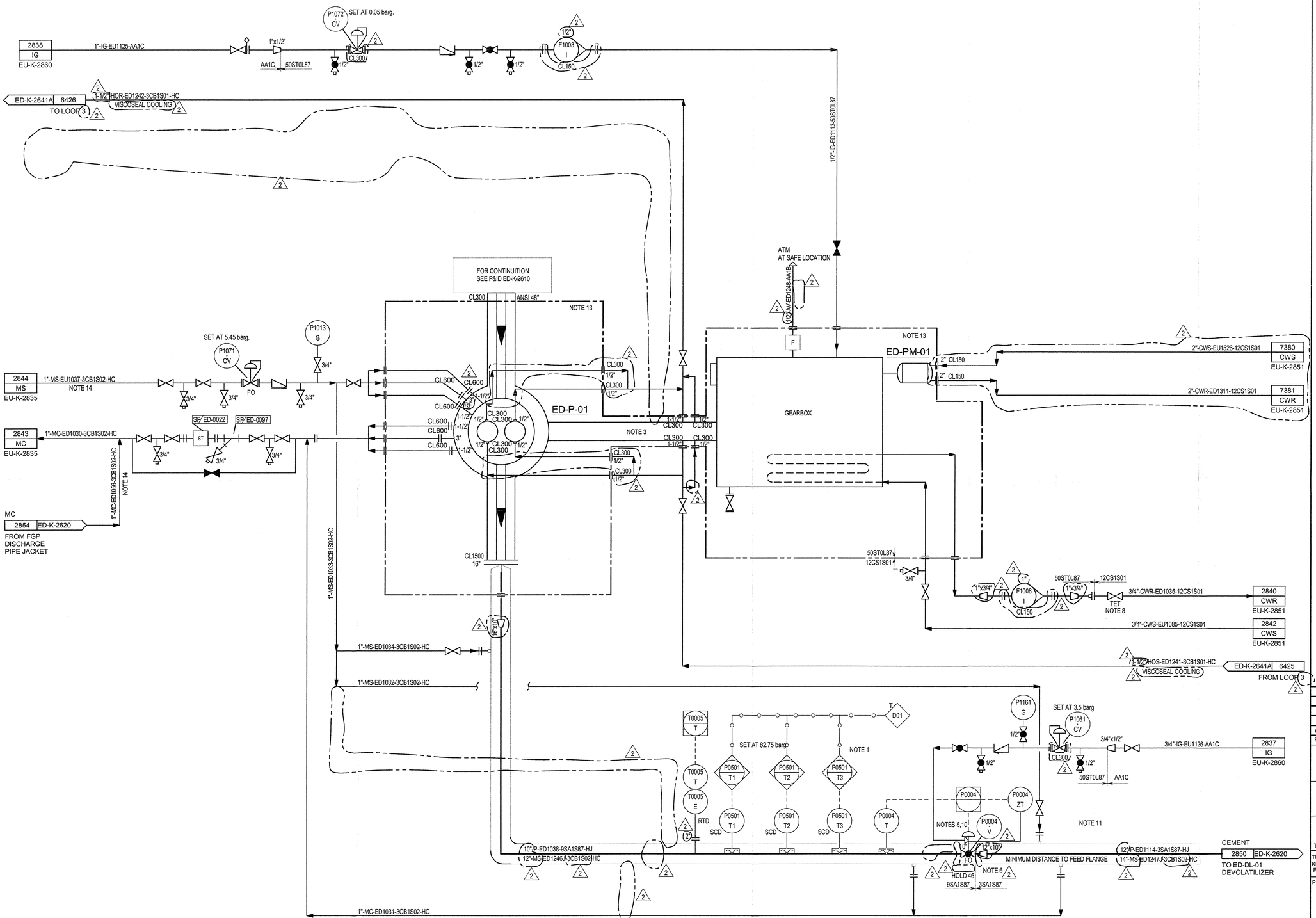
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
LP SEPARATOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ED-K-2610	1 OF 1	1



ED-P-01 NOTE 9
Service: FEED GEAR PUMP
Type: Gear pump (ROTARY)
Capacity: 38.0 m^3/hr
Differential Press.: 7.3 bar / 79.99 bar
Material of Construction: 304 S.S

NOTES:

1. ED-P0501-T1, ED-P0501-T2, ED-P0501-T3 SHALL BE CONFIGURED TO SHUTDOWN THE FEED GEAR PUMP (ED-P-01) WITH 2 OUT OF 3 VOTING LOGIC FOR HIGH & LOW PRESSURE.
2. DELETED.
3. SEAL OIL ACCUMULATOR ALONG WITH RELATED PIPING REQUIRED AT PACKING SEALS.
4. DELETED.
5. FAST ACTING VALVE.
6. STEAM HEATED JACKET.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
8. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS COOLING WATER HAS BEEN DRAINED COMPLETELY".
9. TO BE MONITORED BY MACHINE PROTECTION AND MONITORING SYSTEM.
10. NITROGEN PURGE CONNECTION TO BONNET.
11. POSITION FEEDBACK SIGNAL BY POSITIONER.
12. DELETED.
13. FOR DETAILS OF INSTRUMENTATION OF THE PACKAGE SEE DWG. ED-K-2611A.
14. TWO PHASES FLOW. POSSIBLE UNSTABLES FLOW.

HOLDS:

1. DELETED.
4. DELETED.

46. EPC CONTRACTOR TO COORDINATE WITH FEED GEAR PUMP VENDOR TO DETERMINE VALVE RESPONSE TIME.

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A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

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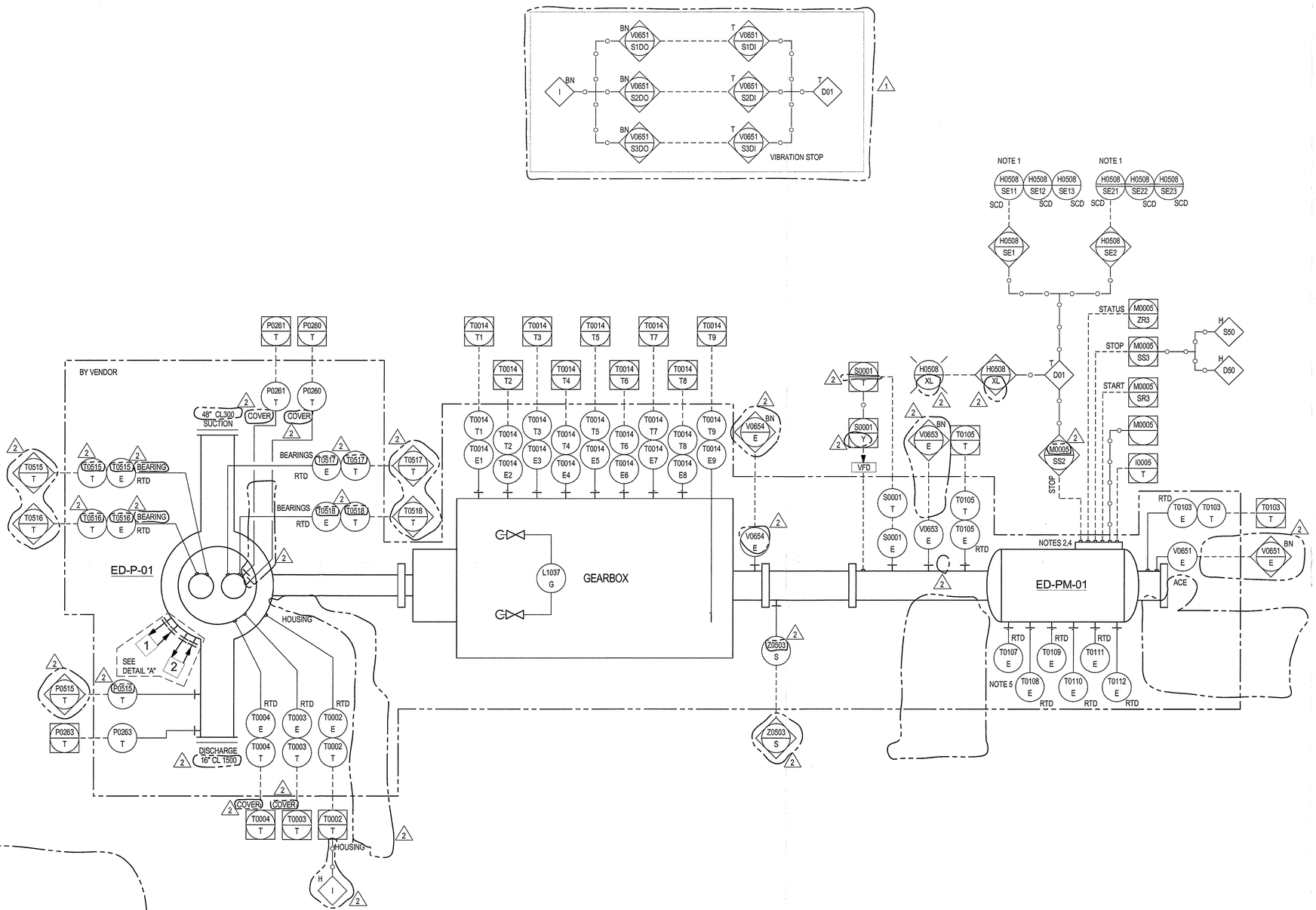
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
FEED GEAR PUMP
PROCESS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2611	1 OF 1	2



NOTES:

1. EMERGENCY SHUTDOWN IN CONTROL ROOM AND LOCAL TRIPS FEED GEAR PUMP (ED-P-01), PELLETIZER (ED-PEL-01), DISCHARGE GEAR PUMP (ED-P-02), AND HYDRAULIC DRIVES FOR THE EXTRUDER.
2. VFD MOTOR.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
4. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
5. THESE SIGNALS GO TO MCC.

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A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MC G	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
FEED GEAR PUMP
INSTRUMENTATION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2611A	1 OF 1	2

ED-X-01
Service: DEVOLATILIZER PACKAGE

ED-EX-01
DISCHARGE EXTRUDER
CAP: 21600 kg/h

ED-DL-01
Service: DEVOLATILIZER

SIGNAL ED-K-2680 2911 TO ED-T-03 WASH TOWER

VENT DOME VAPOR ED-K-2680 2910 TO ED-T-03 WASH TOWER

IHE 2848 ED-K-2610 FROM ISOHEXANE PUMPS

MP CONDENSATE ED-K-2611 2854

FROM ED-P-01 FEED GEAR PUMP 2850 ED-K-2611

CEMENT STABILIZER ED-K-2601 2852 TO ED-D-66 STABILIZER CHARGE STABILIZER DRUM

FROM ED-P-66A/B STABILIZER INJECTION PUMPS 2851 ED-K-2601

6878 IG EU-K-2860

2849 WF EZ-K-2910

2853 IG EU-K-2860

2846 IG EU-K-2860

CEMENT 2864 ED-K-2630 TO ED-P-02 DISCHARGE GEAR PUMP

ED-HYDR-01A

ED-HYDR-01B

ED-HYDR-02

ED-X-01 BY VENDOR

DETAIL "A"

NOTES:

1. BELLOWS FAILURE ALARM.
2. TOP OF DOME CONNECTOR IS THE FIXED REFERENCE POINT. SLOPE THE LINE TOWARDS THE WASH TOWER. REFER TO THE LAYOUT.
3. DELETED.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
5. DELETED.
6. ED-PR011 TO BE GOOD FOR FULL VACUUM.
7. HIGH PRESSURE TO TRIP FEED GEAR PUMP.
8. 2" NOZZLE WITH INSERT PLUG FLANGE.
9. DELETED.
10. DELETED.
11. DELETED.
12. DELETED.
13. SCHEDULE 20 PIPE TO BE APPLIED.
14. DELETED.
15. NOT USED.
16. DELETED.
17. RAM VALVE PLUG TO BE FLUSH WITH POLYMER LINE.
18. CASING ON EXPANSION JOINT FOR LEAK DETECTION.
19. ROV TO CLOSE ON WASH TOWER HIGH LEVEL.
20. DELETED.
21. DELETED.
22. FLANGE TO BE HIGH POINT.
23. ED-P1074-CV VALVE COEFFICIENT (CV) NOT TO EXCEED 1.9 SAFETY VALVE ED-PR-002 RELIEVING RATE AND CAPACITY BASED ON THIS VALUE SIZE.
24. CAMERA SIGHT GLASS FLUSH.
25. ED-P1154-CV VALVE COEFFICIENT (CV) NOT TO EXCEED 2.0. ED-F1179, 1180, 1181-RO DIAMETER NOT TO EXCEED 3.7 mm IN EACH. SAFETY VALVE ED-PR-011 RELIEVING RATE AND CAPACITY BASED ON THIS SIZE.
26. TAKE OFF FROM TOP OF PIPE.
27. 3/4" WEEP HOLE AT LOW POINT OF OUTLET PIPING.
28. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
29. ED-EX-01 CLOSE COUPLED TO ED-P-02. 26"-CL900.
30. INJECTION PORT (1/2" FEMALE NPT WITH PLUG) FOR SECONDARY AQ SYSTEM TO BE PROVIDED.
31. TYPE 1.
32. DEVOLATILIZER PACKAGE IS SHOWN IN P&ID'S ED-K-2620, ED-K-2620A, ED-K-2622 AND ED-K-2622A.
33. THIS PID IS NOT INDICATED THE CONTROL LOOPS. THESE WILL BE DEVELOPED BY VENDOR.
34. ED-P-1073-CV VALVE COEFFICIENT (CU) NOT EXCEED 1.4 SAFETY VALVE ED-PR-003 RELIEVING RATE AND CAPACITY BASED ON THIS VALUE SIZE.
35. TWO PHASES FLOW. POSSIBLE UNSTABLE FLOW.

HOLDS:

2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
20. NUMBERS OF N2 CONNECTION IN TO DOUBLE BELLOWS TO BE DETERMINED DURING DETAIL ENGINEERING.
53. ~~RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR~~ INFORMATION.
54. ~~RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR~~ INFORMATION.
65. RUPTURE DISC DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
PROCESS RELATED

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ED-K-2620	1 OF 1	2

ED-X-01
Service: DEVOLATILIZER PACKAGE

ED-EX-01
DISCHARGE EXTRUDER
CAP: 21600 kg/h

ED-DL-01
Service: DEVOLATILIZER

HOT OIL
ED-K-2641A 6557
TO HOT OIL SKID LOOP 1

2" HOR-ED1178-3CB1S01-HC

3/4" NOTE 7

4"-CWR-ED1214-12CS1S01 NOTE 8

6330 CWR
EU-K-2851

3" HOR-ED1073-3CB1S01-HC

HOT OIL
2886 ED-K-2641A
TO HOT OIL SKID LOOP 4

F0189 T

1-1/2" HOR-ED1063-3CB1S01-HC

VISCOSEAL

HOT OIL
2884 ED-K-2641A
TO HOT OIL SKID LOOP 3

P1135 G
NO 3/4"

6"-HOR-ED4017-3CB1S01-HC

F0189 T
3/4" 3/4"
F0189 E
DTB JACKET

6"-HOR-ED1045-3CB1S01-HC

HOT OIL
2883 ED-K-2641A
TO HOT OIL SKID LOOP 1

NOTES:

2. VALVE IS NO TO ENSURE VENT DOME HEATING IS NOT LOSE DURING HEAT UP OF DEVOLATILIZER DURING START UP. LOSS OF HEATING ON VENT DOME WHILE HEATING DEVOLATILIZER COULD LEAD TO EXCESSIVE STRESS.
3. DEVOLATILIZER PACKAGE IS SHOWN IN P&ID`S ED-K-2620, ED-K-2620A, ED-K-2622 AND ED-K-2622A.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
5. TET TAG TO READ "DO NOT CLOSE, UNLESS THE DEVOL IS DOWN AND HOT OIL HAS BEEN DRAIN FROM THE LINES".
6. DELETED.
7. DRAIN TO BE PROVIDED AT LOW POINT. HOT OIL LINES SHALL BE DRAINED BACK TO ED-D-08 BY DISPLACEMENT WITH NITROGEN PORTABLE PUMP.
8. EDT0166E/ EDT0166T IS A SPARE INSTRUMENT TO BE LOCATED IN WAREHOUSE.
9. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".

HOLDS:

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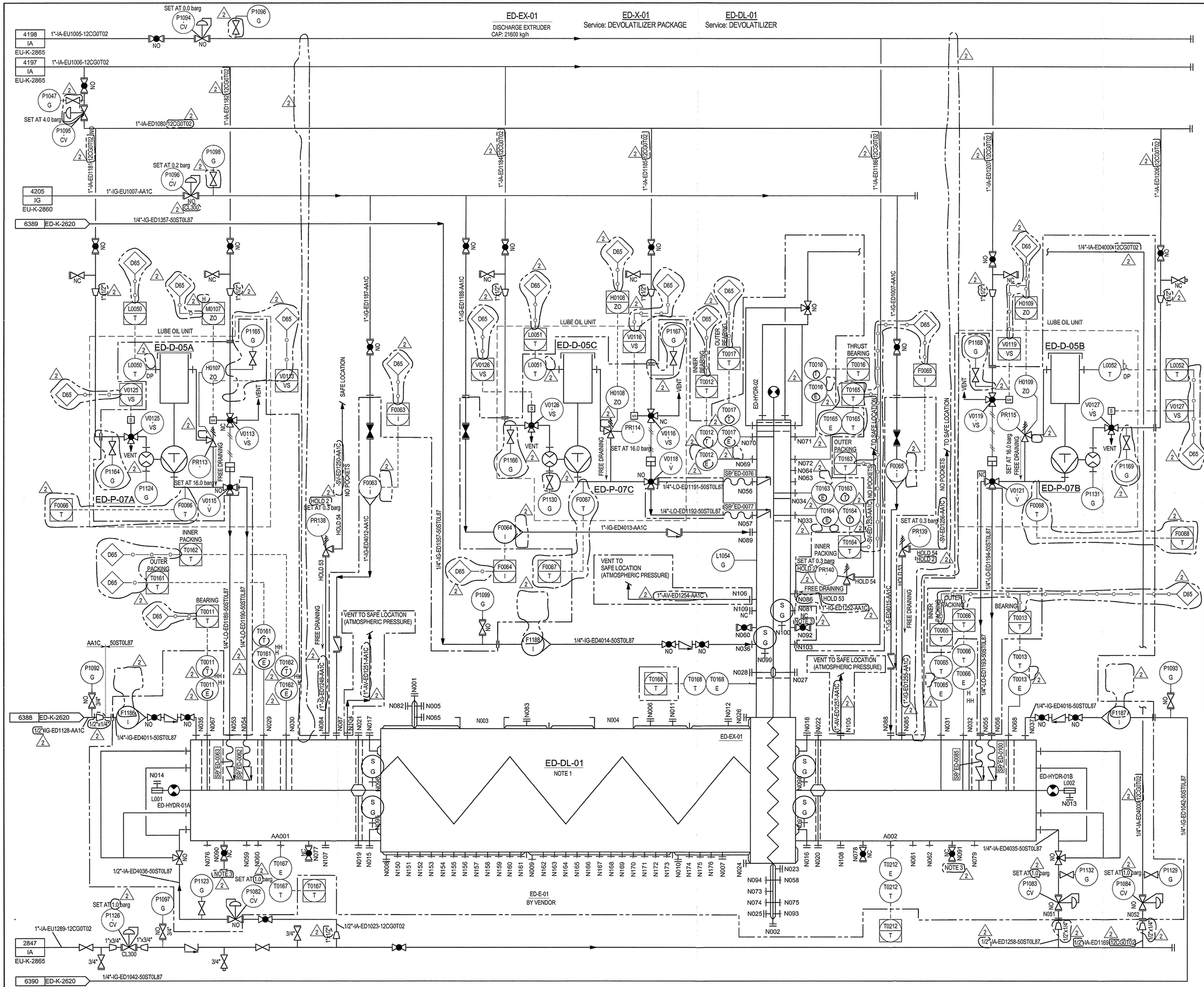
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EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
UTILITY

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2620A	1 OF 1	2



NOTES.

1. DEVOLATILIZER PACKAGE IS SHOWN IN P&IDS ED-K-2620, ED-K-2620A, ED-K-2622 AND ED-K-2622A.
2. DELETED.
3. SPECIAL TYPE OF VALVES WITH SIGHT GLASS USED FOR DRAINING OIL / WATER.

HOLDS:

2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.

KEMYA PROPRIETARY
Restricted Information

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	~~CTR~~	~~RAF~~
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1B	01/03/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

شركة الجبيل للبتروكيماويات
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
NITROGEN BUBBLE

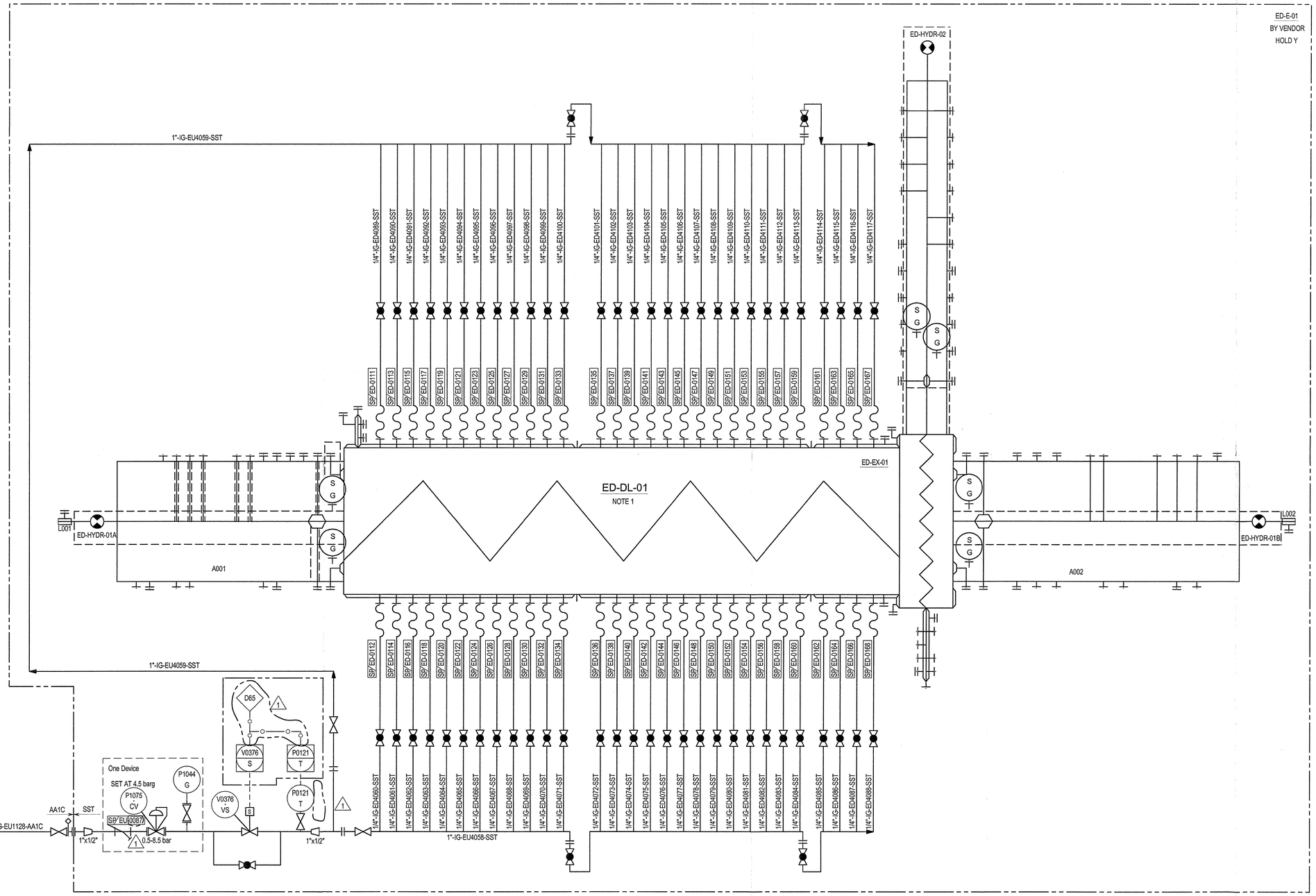
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2622	1 OF 1	2

ED-X-01
Service: DEVOLATILIZER PACKAGE

ED-EX-01
DISCHARGE EXTRUDER
CAP: 21600 kg/h

ED-DL-01
Service: DEVOLATILIZER



NOTES:

1. DEVOLATIZER PACKAGE IS SHOWN IN P&ID'S ED-K-2620, ED-K-2620A, ED-K2622 AND ED-K-2622A.
2. DELETED. (1)

HOLDS:

(1)

KEMYA PROPRIETARY
Restricted Information

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DRE	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1	01/03/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HOOK MONITORING

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2622A	1 OF 1	1

LUBRICATION OIL
ED-K-2630B 6428
TO LUBE OIL SYSTEM

6"-LO-ED1243-1SA0S80

HOT OIL
2889 ED-K-2641A
FROM HOT OIL SKID LOOP 3

2"-HOS-ED1120-3CB1S01-HC
SHAFT COOLING

P1046 G

3/4"

SP/ED-0013

NOTES 4, 11 (TYP. 2)

3/4"

NOTES 17

6413 IG
EU-K-2860

1/2"-IG-EU1227-AA1C

HOT OIL
6780 ED-K-2641A
FROM LOOP 3

2"-HOS-ED1245-3CB1S01-HC
VISCOSEAL COOLING

3/4"

3/4"

3/4"

NOTE 4 (TYP. 2)

CL150

6"

2"

CL150

GEAR BOX

ED-PM-02

NOTE 17

3/4"

2"x1"

CL600

NOTES 4,11 (TYP. 2)

SP/ED-0014

DETAIL "A"

1/2"

CL600

NOTE 3

1/2"

3/4"

NITROGEN
ED-K-2630B 7181

-IG-ED1319-AA1C
HOLD 4

LUBRICATION OIL
ED-K-2630B 6427
FROM LUBE OIL SYSTEM

2"-LO-ED1240-1SA0S80

2"-CWR-ED1238-12CS1S01

6411 CWR
EU-K-2851

2"-CWS-ED1228-12CS1S01

6412 CWS
EU-K-2851

CEMENT
2864 ED-K-2620
FROM ED-EX-01 DISCHARGE EXTRUDER

NOTE 13

DSS

ADAPTER NOTE 16

ED-P-02

2"

CL600

CL600

2"

NOTE 14

10"

CL2500 FF

CEMENT
2865 ED-K-2631
TO ED-PEL-01 PELLETIZER

NOTE 3

CL600

1"

CL600

CL600

1-1/2"

CL600

1/2"

1"-HOR-ED1100-3CB1S01-HC

3/4"

2"x1"

CL600

DETAIL "A"

4"

1-1/2"

T1051 G

4"

F1012

3/4"

TET

NOTES 4,7,10 (TYP. 2)

SP/ED-0015

NOTES 4,11 (TYP. 2)

1"-HOR-ED1098-3CB1S01-HC

1"-HOS-ED1123-3CB1S01-HC

1"-HOS-ED1093-3CB1S01-HC

2"-HOS-ED1094-3CB1S01-HC

1"-HOS-ED1095-3CB1S01-HC

1"-HOR-ED1096-3CB1S01-HC

1"-HOR-ED1097-3CB1S01-HC

NOTE 17

3/4"

NOTE 4 (TYP. 2)

3/4"

NOTE 17

T1052 G

1-1/2"

4"x1"

4"x2"

2"x1"

T1053 G

1-1/2"

4"x2"

4"

P1049 G

3/4"

TET

3/4"

NOTE 7

NOTE 17

T1054 G

1-1/2"

4"

4"x2"

4"x1"

T1055 G

4"

1-1/2"

4"x1"

P1051 G

3/4"

P1050 G

3/4"

2"-HOR-ED1244-3CB1S01-HC

HOT OIL
6781 ED-K-2641A
TO LOOP 3

2"-HOS-ED1123-3CB1S01-HC
DGP JACKET

HOT OIL
ED-K-2641A 2888
FROM HOT OIL SKID LOOP 1

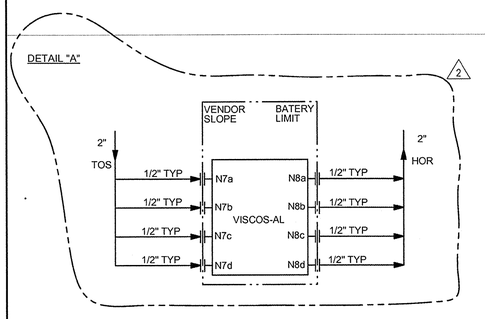
2"-HOR-ED1098-3CB1S01-HC
DGP JACKET

HOT OIL
2891 ED-K-2641A
TO HOT OIL SKID LOOP 1

2"-HOR-ED1099-3CB1S01-HC
SHAFT COOLING

HOT OIL
2890 ED-K-2641A
TO HOT OIL SKID LOOP 3

DETAIL "A"



ED-P-02 NOTE 8
Service: DISCHARGE GEAR PUMP
Type: Gear pump Rotary
Capacity: 29.0 m^3/hr
Differential Press.: 250.0 bar
Material of Construction: 304 SS

NOTES:

1. DELETED.
2. DELETED.
3. SEAL OIL ACCUMULATOR ALONG WITH RELATED PIPING ARE REQUIRED FOR PACKING SEALS.
4. DEPICTED FOR 1 OF 2 SHAFTS.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
6. DELETED.
7. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS HOT OIL HAS BEEN DRAINED COMPLETELY".
8. TO BE MONITORED BY MACHINE PROTECTION AND MONITORING SYSTEM.
9. DELETED.
10. INSTRUMENT TAGS ARE AS FOLLOWS: ED-T1061G, ED-F1022I.
11. SP ITEM TAGS ARE AS FOLLOWS: SP/ED-0016 / 0017 / 0018.
12. DELETED.
13. ED-EX-01 CLOSED COUPLED TO ED-P-02.
14. ED-P-02 CLOSED COUPLED TO ED-PEL-01.
15. DELETED.
16. ADAPTER DIMMENSIONS: 26"X18", CL900 FF.
17. DRAIN TO BE PROVIDED AT LOW POINT. HOT OIL LINES TO BE DRAINED BACK TO ED-D-08. BY DISPLACEMENT WITH NITROGEN/PORTABLE PUMP.

HOLDS:

3. DELETED.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
22. DELETED.

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A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

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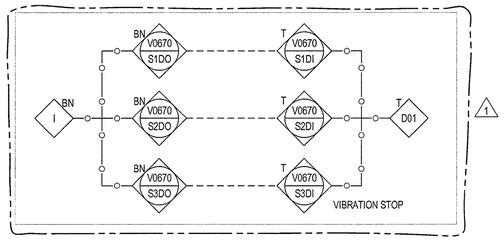
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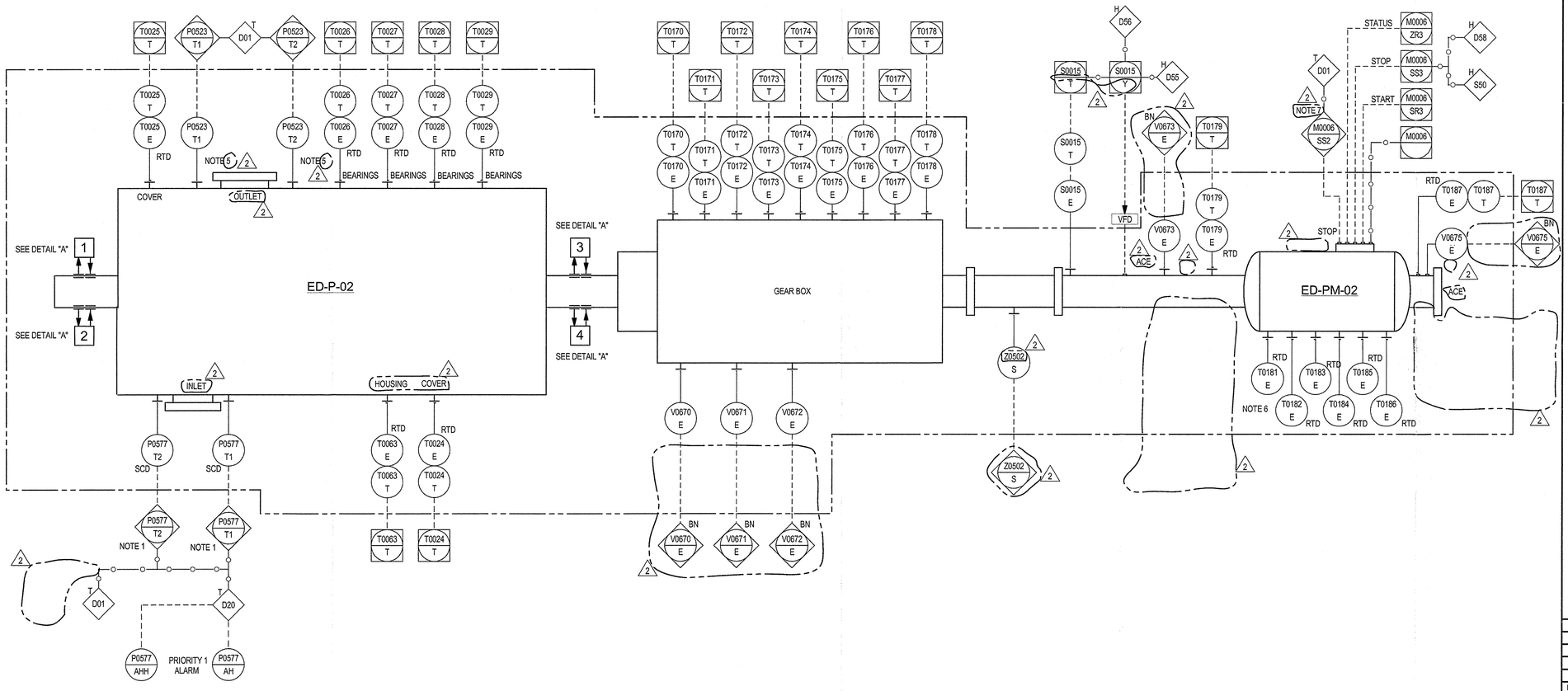
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
DISCHARGE GEAR PUMP
PROCESS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2630	1 OF 1	2





NOTES:

1. THE SETTINGS OF THE ALARMS AND TRIPS ACCORDING TO THE VENDOR C&E AND ALARMS LIST.
2. DELETED.
3. DELETED.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
5. NOT SAFETY CRITICAL, ROUTED TO SIS FOR RAPID RESPONSE TO PREVENT EQUIPMENT DAMAGE. STOP DISCHARGE GEAR PUMP MOTOR ON 1 OUT OF 2 HIGH PRESSURE.
6. THESE SIGNALS GO TO MCC. 1
7. READ NOTE 1 FROM P&ID ED-K-2611A FOR EMERGENCY SHUTDOWN OF DISCHARGE GEAR PUMP ED-P-02.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	RAF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
DISCHARGE GEAR PUMP
INSTRUMENTATION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2630A	1 OF 1	2

ED-D-51
Service: LUBE OIL DRUM
Dimension: 1200 X 1250 X 700
Design Pressure (Max / Min) @ Temperature.: / x 0.1 BARG / 100.0 C
Materials of Construction: SS
Trim.:
Insulation (type/thickness).: /

ED-FIL-50A/ B
Service: LUBE OIL FILTER
Type: Filter
Capacity: 25 MICRON MESH
Design Pressure (Max / Min) @ Temperature: 15.0 barg / x 90.0 C
Differential Pressure: 2.2 bar
Material of Construction: SS
TRIM:

ED-E-56
Service: LUBE OIL COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 40 kW
Surface Area:
Shell Design Pressure (Max / Min) @ Temperature.: 10.0 barg / x 90.0 C
Tube Design Pressure (Max / Min) @ Temperature.: 10.0 barg / x 90.0 C
Materials of Construction (Shell/Tubes): CS / SS
Trim (Shell/Tubes):
Insulation (type/thickness): /

ED-X-02
Service: LUBE OIL SYSTEM FOR ED-P-02

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISED STATED.
2. DELETED.
3. CLEANING COVER.
4. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".

HOLDS:

2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
5&8. DELETED.

ED-P-54A/ B
Service: LUBE OIL PUMP
Type: Gear pump
Capacity: 9.0 m^3/hr
Differential Press.: 11.0 bar
Material of Construction: CS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	~~BRE~~	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LUBE OIL SYSTEM
GEAR PUMP

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ED-K-2630B	1 OF 1	2

ED-PEL-01
Service: PELLETIZER
CAP: 21600kg/h POLYMER & 458 m^3/h WATER

ED-X-05
Service: PELLETIZER PACKAGE

HOT OIL
2893 ED-K-2641A
FROM HOT OIL SKID LOOP 1

3"-HOS-ED1124-3CB1S01-HC
DIE HOUSING JACKET

CONTRACTOR VENDOR
3"x1-1/2"

3/4"

T0134 T0137 T0135 T0130 T0136

P0567 T2

SP/ED-0066

SP/ED-0067

P1021 G

P1020 G

T1003 G

T1002 G

T0130 T0134 T0137 T0135 T0136 T

T0130 T0134 T0137 E T0135 E

NOTE 4

NOTES 3,19

CEMENT
2865 ED-K-2630
FROM ED-P-02 DISCHARGE GEAR PUMP

NOTE 16

METAL (A421)

METAL MELT DIE HOUSING (GKG A408)

MELT DIE PLATE (LP A409)

ED-X-05

ED-PEL-01
(A410)

P0567 T1

D01

HOT OIL
ED-K-2641A 2894
TO HOT OIL SKID LOOP 1

3"-HOR-ED1108-3CB1S01-HC
DIE HOUSING JACKET

CONTRACTOR VENDOR
3"x1-1/2"

POLY PELLET WATER SEWER
EZ-K-2975 7459
TO EZ-TK-80

8"-WW-ED1106-AR5W

F0004
F0004 V
F0004 T
F0004 E
4"
FHO
1/2"
3/4"
HOLD 52

4"-HOS-ED1116-3CB1S01-HC
DIE PLATE
HOT OIL
ED-K-2641A 2892
FROM HOT OIL SKID LOOP 2

4"-HOR-ED1102-3CB1S01-HC
DIE PLATE
HOT OIL
2895 ED-K-2641A
TO HOT OIL SKID LOOP 2

Z0501 S
Z0500 S
Z0501 T
Z0500 T
Z0501 S

C1-OV C1-C C1-OP C3-OP C3-C C3-O
Z0118 Z0119 Z0120 Z0121 Z0122 Z0123
S T
DXX

NOTE 5

Z0140 S0020 S0520 T

S0116 Y

X0001 AA TORQUE
M0008 X X0008 S M0008 MS

MALFUNCTION NOTE 9
U0001 A M0008

VFD

PELLET
10"-P-ED1103-AR5W-CC
7065 ED-K-2631B
TO ES-SCRN-01

LOCKING
ED-K-2631A 7066

UNLOCKING
7067 ED-K-2631A

Z0140 S0020 E S0520 E

STOP M0008 SS3 S50
START M0008 SR3 D60
STATUS M0008 ZR3
VENDOR CONTRACTOR

NOTES 8,19
ED-PELM-01

KNIFE BACKWARDS
ED-K-2631A 7068

STOP M0008 SS2 NOTE 2 D01

KNIFE FORWARDS
7069 ED-K-2631A

TROLLEY BACKWARDS
ED-K-2631A 7070

TROLLEY FORWARDS
7071 ED-K-2631A

C2-OP C2-C C2-OV C4-OV C4-C C4-OP
Z0112 Z0111 Z0110 Z0113 Z0114 Z0115
S

Z0130 S
Z0128 S
Z0201 I

P0024 T
P0600 T
D01

H0008 ZO H0008 ZC H0008 VS H0008 V
FC CL300 CC

P1026 G

SP/ED-0065

10"-P-ED1112-AR5W-CC
PELLET WATER
ED-K-2631B 7072
FROM ED-E-01 PELLET WATER CHILLER

-IA-EU1398-12CG0T02
HOLD 4
7242 IA
EU-K-2865

NOTES:

1. DELETED.
2. FEED GEAR PUMP, PELLETIZER DISCHARGE GEAR PUMP, AND DSS HYDRAULIC MOTORS TO BE TRIPPED IF EMERGENCY S/D BUTTON ON OPERATOR CONSOLE.
3. LEAVE SPACE FOR FUTURE RHEOMETER.
4. CONNECTING FLANGE FOR RHEOMETER PLUGGED.
5. PELLETIZER LOCKED/UNLOCKED OVER TRAVEL INDICATION.
6. DELETED.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
8. VFD MOTOR.
9. MOTOR POWER INDICATION NEEDED AT OPERATOR CONSOLE.
10. DELETED.
11. DELETED.
12. DELETED.
13. DELETED.
14. DELETED.
15. DELETED.
16. ED-P-02 CLOSE COUPLED TO ED-PEL-01.
17. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
18. DELETED.
19. CONNECTING FLANGE FOR RHEOMETER PLUGGED.

HOLDS:

1. CONTROL VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
2. DELETED.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
52. BYPASS SIZE TO BE CONFIRMED WITH FINAL CONTROL VALVE SIZE.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	CBE	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
PELLETIZER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2631	1 OF 1	2

ED-X-06
Service: PELLETIZER HYDRAULIC SUB-PACKAGE

ED-E-14
Service: HEAT EXCHANGER HYDRAULIC UNIT
Type: TEMA shell type E Shell & Tube heat exchanger (AEL)
Heat Duty: 2600 kW
Surface Area: 1 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 40.0 barg / x 120.0 C
Tube Design Pressure (Max / Min) @ Temperature.: 16.0 barg / x 95.0 C
Materials of Construction (Shell/Tubes): / HOLD 8
Trim (Shell/Tubes):
Insulation (type/thickness): / HOLD 8

NOTES:
1. TUBING SPEC:
SST-A1 = SS TUBING (10 mm OD x 1.5 mm WALL)
SST-A3 = SS TUBING (18 mm OD x 2.0 mm WALL)
2. THROTTLE VALVE, FIXED.
3. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE NOT SIDE HAS BEEN BLOCKED IN FIRST".

HOLDS:
8. BY VENDOR

ENABLING
SOLENOID A FAST
SOLENOID A SLOW
SOLENOID B FAST
U0050 VS4
U0050 VS3
U0050 VS2
U0050 VS1
BY VENDOR
P0062
P0062 T
ED-K-2631 7066
LOCKING
7067 ED-K-2631
UNLOCKING
CONTINUED PID ED-K-2631
TROLLEY FORWARDS
ED-K-2631 7071
TROLLEY BACKWARDS
7070 ED-K-2631
ED-X-06
SET AT 180.0 barg
PR046
PR047
UG MOVEMENT VALVE ENABLING POSITION CLOSED
KNIFE BACKWARDS
ED-K-2631 7069
KNIFE FORWARDS
7068 ED-K-2631
SET AT 40.0 barg
PR045
SET AT 60.0 barg
PR040
SET AT 70.0 barg
PR041
PR042
SET AT 100.0 barg
PR044
PR043
5 BAR (G)
20 - 60 BAR (G)
ENABLING
SETPOINT
7489 CWR EU-K-2851
7490 CWS EU-K-2851
3/4"-CWR-ED1327-12CS1S01
3/4"-CWS-EU1552-12CS1S01
NOTE 3
NOTE 2
M0100 SR3 START
M0100 SS3 STOP
U0100 A FAULT
M0100 ZR3 OPERATION
M0100 SS2
M0101 SR3 START
M0101 SS3 STOP
U0101 A FAULT
M0101 ZR3 STATUS
M0101 SS2
M0102 ZR3 STATUS
U0102 A FAULT
M0102 SS3 STOP
M0102 SR3 START
M0102 SS2
ED-PM-14
ED-P-14
ED-PM-16
ED-P-16
ED-FIL-14
ED-FIL-15
ED-E-14
ED-D-14
ED-PM-15A
ED-P-15A
ED-PM-15B
ED-P-15B

ED-P-14
Service: TROLLEY BACKWARDS FORWARDS
Type: Gear pump
Capacity: 1.9 m^3/hr (32 l/min)
Differential Press.: HOLD 8
Material of Construction: HOLD 8

ED-P-15A/ B
Service: KNIFE PRESSURE PUMP
Type: Gear pump
Capacity: 0.4 m^3/hr (7l/min)
Differential Press.: HOLD 8
Material of Construction: HOLD 8

ED-P-16
Service: TROLLEY MANUAL DOCKING UNDOCKING
Type: Metering Pump
Capacity: 0.1 m^3/hr
Differential Press.: HOLD 8
Material of Construction: HOLD 8

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	17/10/2013	FINAL ISSUE REVISED	MCG	DRF	RAF
1	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
0	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

kemya — al jubail petrochemical co.

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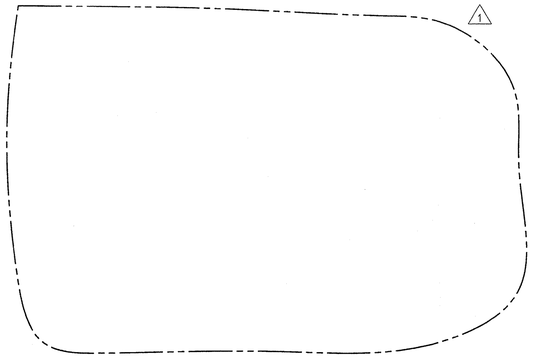
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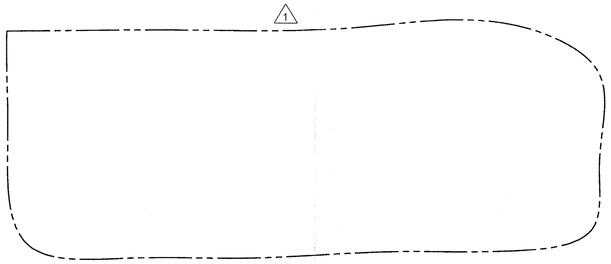
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

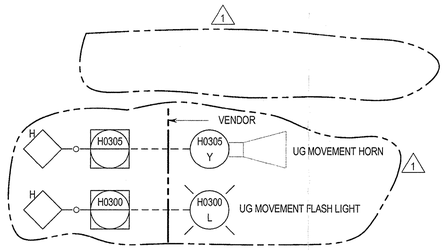
TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
PELLETIZER HYDRAULIC SUB-PACKAGE

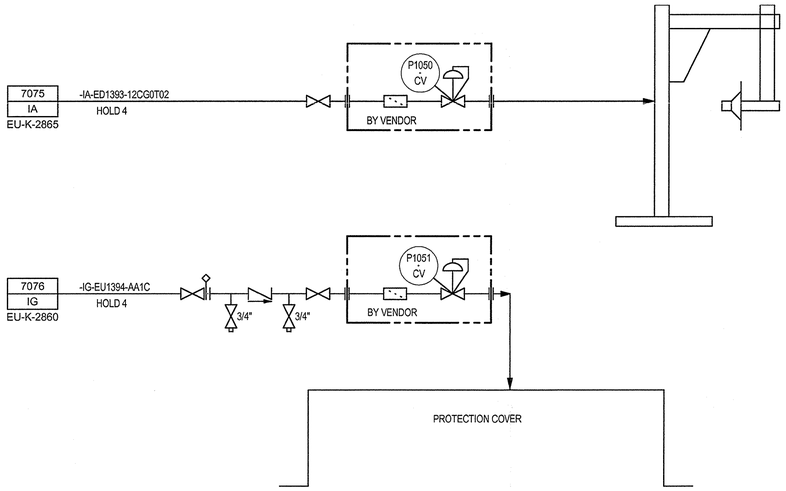
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

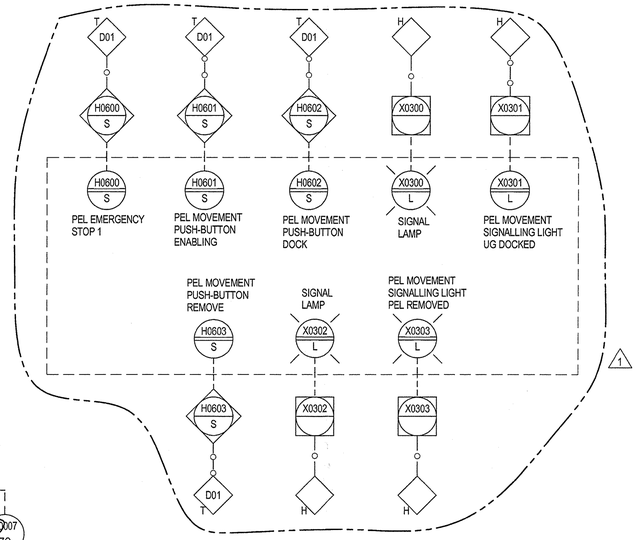
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2631A	1 OF 1	2

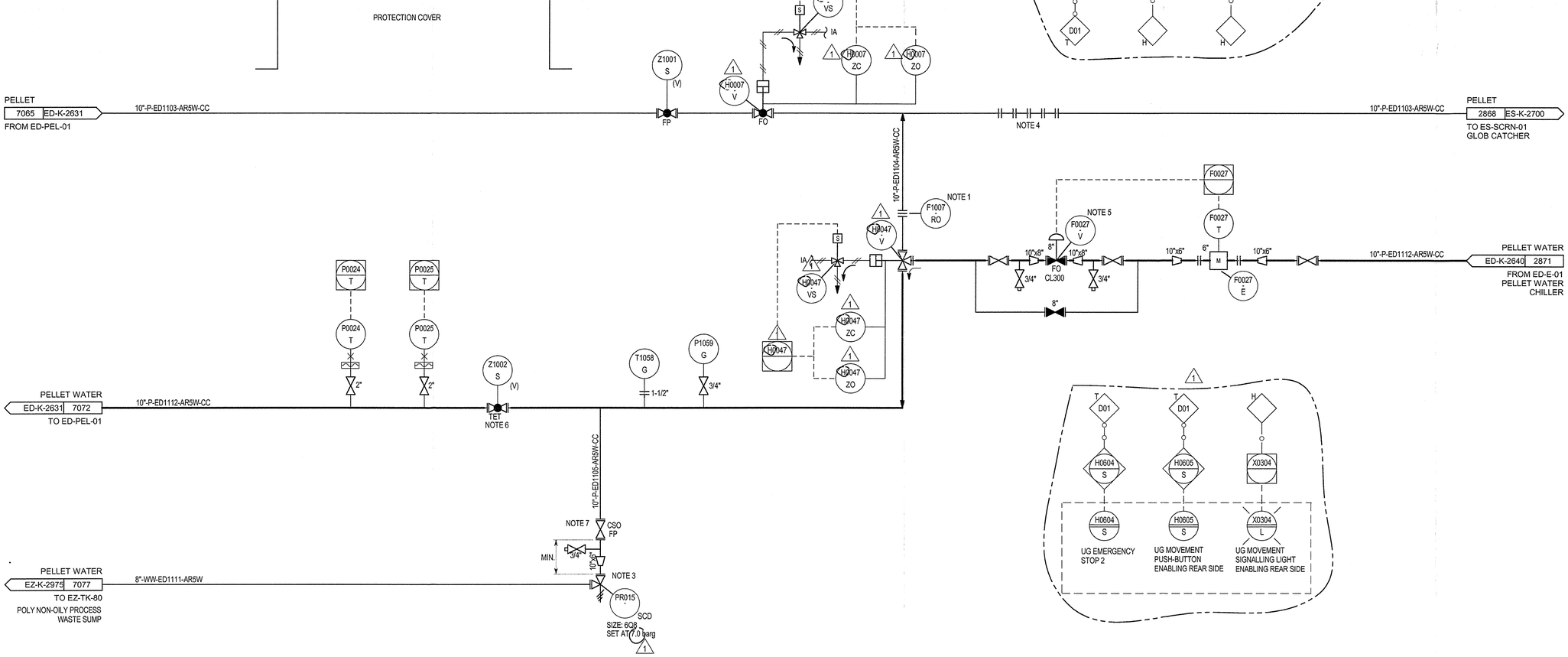












NOTES:

1. RESTRICTION ORIFICE SIZED FOR FULL WATER FLOW.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
3. SAFETY VALVE SHALL BE MOUNTED UPSIDE DOWN AND MOUNTED DIRECTLY OFF THE BOTTOM OF THE PELLET WATER LINE TO PREVENT FLOATING FINES FROM PLUGGING SAFETY VALVE.
4. BREAK OUT SPOOL TO BE PROVIDED EVERY 25m BETWEEN PELLETIZER AND GLOB CATCHER.
5. ED-DR015 RELIEVING RATE BASE ON THIS VALVE AND ES-P-03A/B PUMP CURVE. ED-F0027-V VALVE COEFFICIENT NOT TO EXCEED 818.
6. "DO NOT CLOSE UNLESS PELLETIZER HAS BEEN DRAINED".
7. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DBF	RAF
0	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
PELLETIZER PELLET WATER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2631B	1 OF 1	1

CONTINUED P&ID ED-K-2634

BY VENDOR

CONTINUED P&ID ED-K-2633A

HYDRAULIC MOTOR UNIT
(DTB Discharge Side)

ED-HYDR-01B

6372 ED-K-2634
FROM HYDAULIC DRIVE SYSTEM CHARGE FILTER

6374 ED-K-2633A
TO HYDRAULIC DRIVE SYSTEM PUMP 2/2

6375 ED-K-2633A
TO HYDRAULIC DRIVE SYSTEM PUMP 2/2

6376 ED-K-2633A
TO HYDRAULIC DRIVE SYSTEM PUMP 2/2

6377 ED-K-2633A
TO HYDRAULIC DRIVE SYSTEM PUMP 2/2

ED-K-2633A 6378
FROM HYDRAULIC DRIVE SYSTEM PUMP 2/2

ED-P-04A2

ED-P-04A1

ED-PM-04A

ED-P-04A

ED-P-04B2

ED-P-04B1

ED-PM-04B

ED-P-04B

PUMP UNIT 1 DTB

PUMP UNIT 2 DTB

SET AT 300.0 barg

SET AT HOLD 8

STOP SIGNAL

COMMAND SIGNAL

ED-P-04A/ B
Service: HYDRAULIC OIL HIGH PRESSURE PUMP
Type: Generic pump (AXIAL PISTON)
Capacity: 54.0 m^3/hr
Differential Press.: 350.0 bar (MAX)
Material of Construction: HOLD 8

NOTES:

1. THIS PID IS NOT INDICATED THE CONTROL LOOPS. THESE WILL BE DEVELOPED BY VENDOR.
2. PACKAGE VENDOR INFORMATION EXCEPT DCS.
3. RUPTURE PIN.
4. THE ED-HYDR-01B REPRESENTATION ON P&ID IS SUPPORTED BY HYDRAULIC SCHEMATIC: HUS 3450-002, HUS 3451-002, HUS 3452-002, HUS 3453-002, HUS 3454-002, HUS 3455-002.
5. ST524 CODE IS FOLLOWING PIPING SPEC FROM VENDOR.

HOLDS:

8. BY VENDOR.

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REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	RBF	BAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1	01/03/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HYDRAULIC DRIVE SYSTEM PUMP 1/2

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2633	1 OF 1	2

CONTINUED P&ID ED-K-2633

BY VENDOR

CONTINUED P&ID ED-K-2634

HYDRAULIC MOTOR UNIT for DSS

ED-HYDR-02

6374 ED-K-2633 FROM HYDRAULIC DRIVE SYSTEM PUMP 1/2

6375 ED-K-2633 FROM HYDRAULIC DRIVE SYSTEM PUMP 1/2

6376 ED-K-2633 FROM HYDRAULIC DRIVE SYSTEM PUMP 1/2

6377 ED-K-2633 FROM HYDRAULIC DRIVE SYSTEM PUMP 1/2

ED-K-2633 6378 FROM HYDRAULIC DRIVE SYSTEM PUMP 1/2

6368 ED-K-2634 TO HYDRAULIC DRIVE SYSTEM PUMP 2

6369 ED-K-2634 TO HYDRAULIC DRIVE SYSTEM PUMP 2

6370 ED-K-2634 TO HYDRAULIC DRIVE SYSTEM PUMP 2

ED-K-2634 6371 FROM HYDRAULIC DRIVE SYSTEM PUMP 2

SET AT 300.0 barg NOTE 3

ED-P-05A2

ED-P-05A1

ED-P-05A

ED-PM-05A PUMP UNIT 3 DSS

ED-P-05B2

ED-P-05B1

ED-P-05B

ED-PM-05B PUMP UNIT 4 SPARE DTB/DSS

ED-P-05A/ B
Service: HYDRAULIC OIL HIGH PRESSURE PUMP
Type: Generic pump (AXIAL PISTON)
Capacity: 54.0 m^3/hr
Differential Press.: 350.0 bar (MAX)
Material of Construction: HOLD 8

NOTES:

1. THIS PID IS NOT INDICATED THE CONTROL LOOPS. THESE WILL BE DEVELOPED BY VENDOR.
2. PACKAGE VENDOR IFORMATION EXCEPT DCS.
3. RUPTURE PIN.

HOLDS:

4. DELETED.
8. BY VENDOR.

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2	13/09/2013	FINAL ISSUE	MCG	DRS	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1	19/02/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

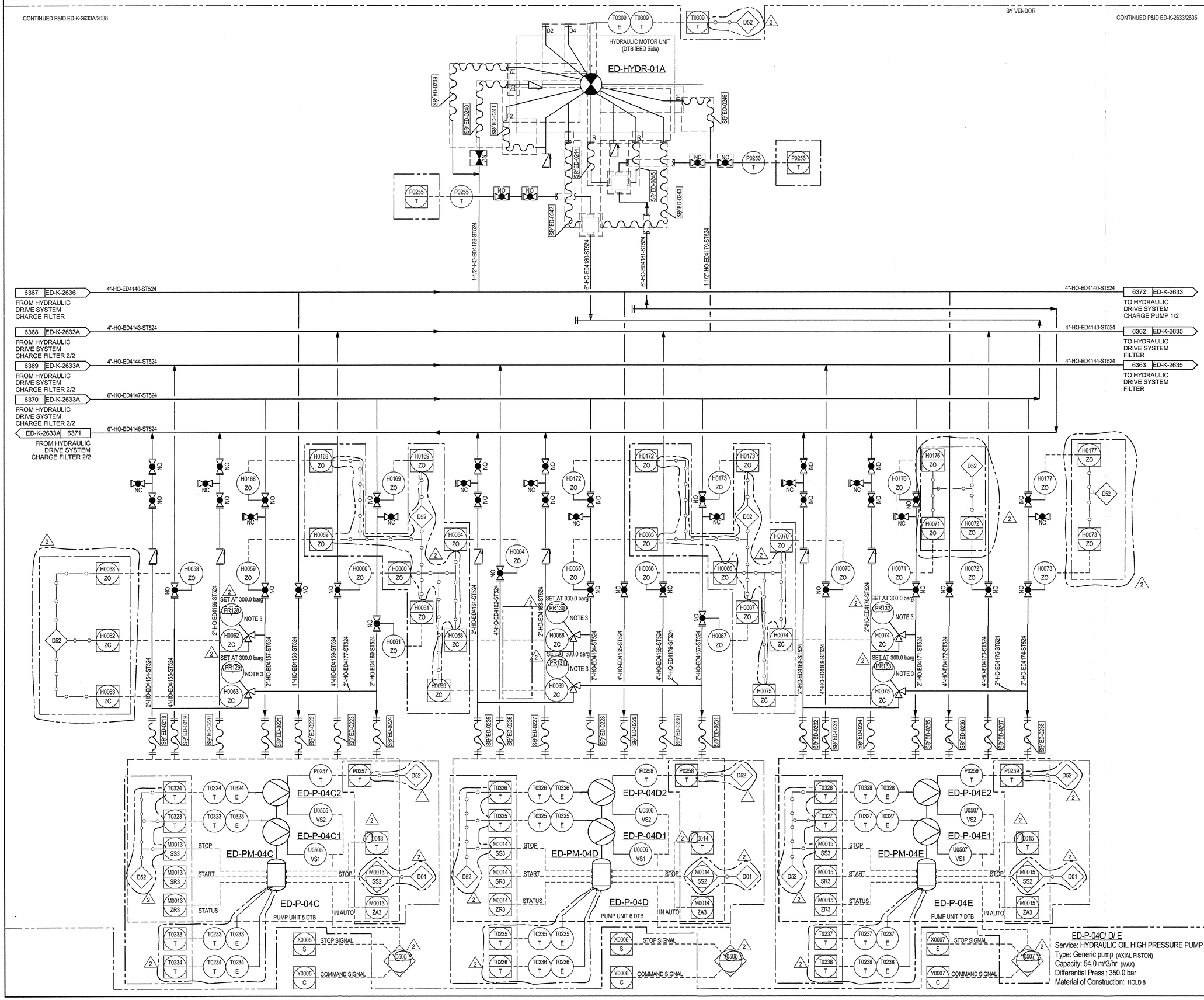
TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HYDRAULIC DRIVE SYTEM PUMP 2/2

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2633A	1 OF 1	2

CONTINUED P&D ED-K-2633A/2636

BY VENDOR

CONTINUED P&D ED-K-2633/2635



ED-P-04C/ D/ E
Service: HYDRAULIC OIL HIGH PRESSURE PUMP
Type: Generic pump (AXIAL PISTON)
Capacity: 54.0 m^3/hr (MAX)
Differential Press.: 350.0 bar
Material of Construction: HOLD 8

NOTES:

1. THIS PID IS NOT INDICATED THE CONTROL LOOPS. THESE WILL BE DEVELOPED BY VENDOR.
2. PACKAGE VENDOR INFORMATION EXCEPT DCS.
3. RUPTURE PIN.

HOLDS:

8. BY VENDOR.

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2	13/09/2013	FINAL ISSUE	MCG	RBF	RAF
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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1	01/03/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HYDRAULIC DRIVE SYSTEM PUMP 2

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2634	1 OF 1	2

ED-FIL-06A/ B/ C
Service: HYDRAULIC OIL DRAIN FILTER
Type: Filter
Capacity: 45.0 m^3/hr
Design Pressure (Max / Min) @ Temperature: 16.0 barg /- x 80.0 C
Differential Pressure: 3.0 bar
Material of Construction: ALUMINIUM
TRIM: -

ED-FIL-07A/ B/ C/ D
Service: HYDRAULIC OIL RETURN FILTER
Type: Filter
Capacity: 45.0 m^3/hr
Design Pressure (Max / Min) @ Temperature: 16.0 barg /- x 80.0 C
Differential Pressure: 3.0 bar
Material of Construction: ALUMINIUM
TRIM: -

ED-E-05A/ B 2
Service: HYDRAULIC OIL COOLER
Type: Plate heat exchanger
Heat Duty: 900 kW
Materials of Construction: 316 S.S.

3469 CWS EU-K-2851 — 6"-CWS-EU1008-12CS1S01
4196 IA EU-K-2865 — 1/2"-IA-EU1011-12CG0T02

CONTINUED P&ID ED-K-2634 BY VENDOR

1/2"-IA-ED1205-12CG0T02
4"-CWS-ED1195-12CS1S01
1/2"-IA-EU1011-12CG0T02
6"-CWS-EU1008-12CS1S01

6"-CWR-ED1086-12CS1S01 → 3468 CWR EU-K-2851
4"-CWR-ED1196-12CS1S01 2

6"x4" 6"x4"

CONTINUED P&ID ED-K-2636

OIL FILLER

SKID

ED-FIL-06A/B/C DRAIN FILTER

ED-FIL-07A/B/C RETURN FILTER

ED-FIL-06A
ED-FIL-06B
ED-FIL-06C
ED-FIL-07A
ED-FIL-07B
ED-FIL-07C
ED-FIL-07D

H0076 ZO, H0077 ZO, H0078 ZO, H0079 ZO, H0080 ZO, H0081 ZO, H0082 ZO, H0083 ZO, H0084 ZO, H0085 ZO, H0086 ZO, H0087 ZO, H0088 ZO, H0089 ZO
D66
DRAIN 1/2"
VENTING VALVE
set @ 0.1 barg
set @ 3 barg
P0218 DT
P0219 DT

COOLING UNIT

V0128 VS, V0128 V, V0129 VS, V0129 V
NC

ED-E-05A ED-E-05B
N001 N002 N003 N004
set @ 8 barg

H0090 ZO, H0091 ZO, H0092 ZO, H0093 ZO
H0271 ZC
SET AT 12.0 barg
PR117
NOTE 3 2

STANDBY COOLING UNIT 2

SP-ED-0247 SP-ED-0248 set @ 1500 kPa (g) SP-ED-0249 SP-ED-0250 SP-ED-0251 SP-ED-0252

PUMP UNITS
6362 ED-K-2634 — 4"-HO-ED4143-ST524
FROM HYDRAULIC DRIVE SYSTEM PUMPS
PUMP UNITS
6363 ED-K-2634 — 4"-HO-ED4144-ST524
FROM HYDRAULIC DRIVE SYSTEM PUMPS

4"-HO-ED4145-ST524

4"-HO-ED4146-ST524 → 6365 ED-K-2636 TO HYDRAULIC DRIVE SYSTEM RESERVOIR

4"-HO-ED4142-ST524 → 6366 ED-K-2636 TO HYDRAULIC DRIVE SYSTEM RESERVOIR 2

NOTES:

1. THIS PID IS NOT INDICATED THE CONTROL LOOPS. THESE WILL BE DEVELOPED BY VENDOR.
2. PACKAGE VENDOR INFORMATION EXCEPT DCS.
3. RUPTURE PIN. 2

HOLDS:

8. DELETED. 2

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REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1	01/03/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HYDRAULIC DRIVE SYSTEM FILTER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2635	1 OF 1	2

ED-FIL-04A/ B/ C/ D
Service: HYDRAULIC OIL CHARGE FILTER
Type: Filter
Capacity: 45.0 m^3/hr
Design Pressure (Max / Min) @ Temperature: 40.0 barg / x 100.0 C
Differential Pressure: 3.0 bar
Material of Construction: CS
TRIM:

ED-D-04
Service.: HYDRAULIC OIL RESERVOIR
Dimension.: X HOLD 8
Design Pressure (Max / Min) @ Temperature.: 0.1 barg / x 65.0 C
Materials of Construction.: 304 S.S.
Trim.:
Insulation (type/thickness).: /

ED-FIL-05A/ B/ C/ D
Service: HYDRAULIC OIL CHARGE FILTER
Type: Filter
Capacity: 45.0 m^3/hr
Design Pressure (Max / Min) @ Temperature: 40.0 barg / x 100.0 C
Differential Pressure: 3.0 bar
Material of Construction: CS
TRIM:

NOTES:

1. THIS PID IS NOT INDICATED THE CONTROL LOOPS. THESE WILL BE DEVELOPED BY VENDOR.
2. INSTRUMENT AIR FOR VENDOR DEVOLATIZER INSTRUMENTS.
3. PACKAGE VENDOR INFORMATION EXCEPT DCS.
4. RUPTURE PIN. (2)

HOLDS:

8. BY VENDOR.

CONTINUED P&ID ED-K-2635

CONTINUED P&ID ED-K-2634

6366 ED-K-2635 FROM HYDRAULIC DRIVE SYSTEM FILTER

6365 ED-K-2635 FROM HYDRAULIC DRIVE SYSTEM FILTER

6367 ED-K-2634 TO HYDRAULIC DRIVE SYSTEM PUMP

4"-HO-ED4142-ST524
4"-HO-ED4146-ST524
4"-HO-ED4140-ST524

CHARGE FILTER UNIT 1
ED-FIL-04A/B/C/D

ED-FIL-04A
ED-FIL-04B
ED-FIL-04C
ED-FIL-04D

VENTING VALVE

set @ 3 barg

HYDRAULIC OIL RESERVOIR
ED-D-04

BREATHER CAP

Tank 3500

TANK UNIT

CHARGE FILTER UNIT 2
ED-FIL-05A/B/C/D

ED-FIL-05A
ED-FIL-05B
ED-FIL-05C
ED-FIL-05D

ED-P-06A / ED-PM-06A
ED-P-06B / ED-PM-06B
ED-P-06C / ED-PM-06C
ED-P-06D / ED-PM-06D

IN AUTO / STOP / START / STATUS

SET AT 40.0 barg

set @ 8 barg
set @ 25 barg
set @ 0.5 barg

NOTE 4

S/F ED-0255
S/F ED-0256
S/F ED-0257
S/F ED-0258
S/F ED-0261
S/F ED-0263
S/F ED-0265
S/F ED-0259
S/F ED-0260
S/F ED-0270
S/F ED-0262
S/F ED-0264
S/F ED-0266
S/F ED-0268
S/F ED-0267
S/F ED-0269
S/F ED-0253
S/F ED-0254

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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1	01/03/2013	ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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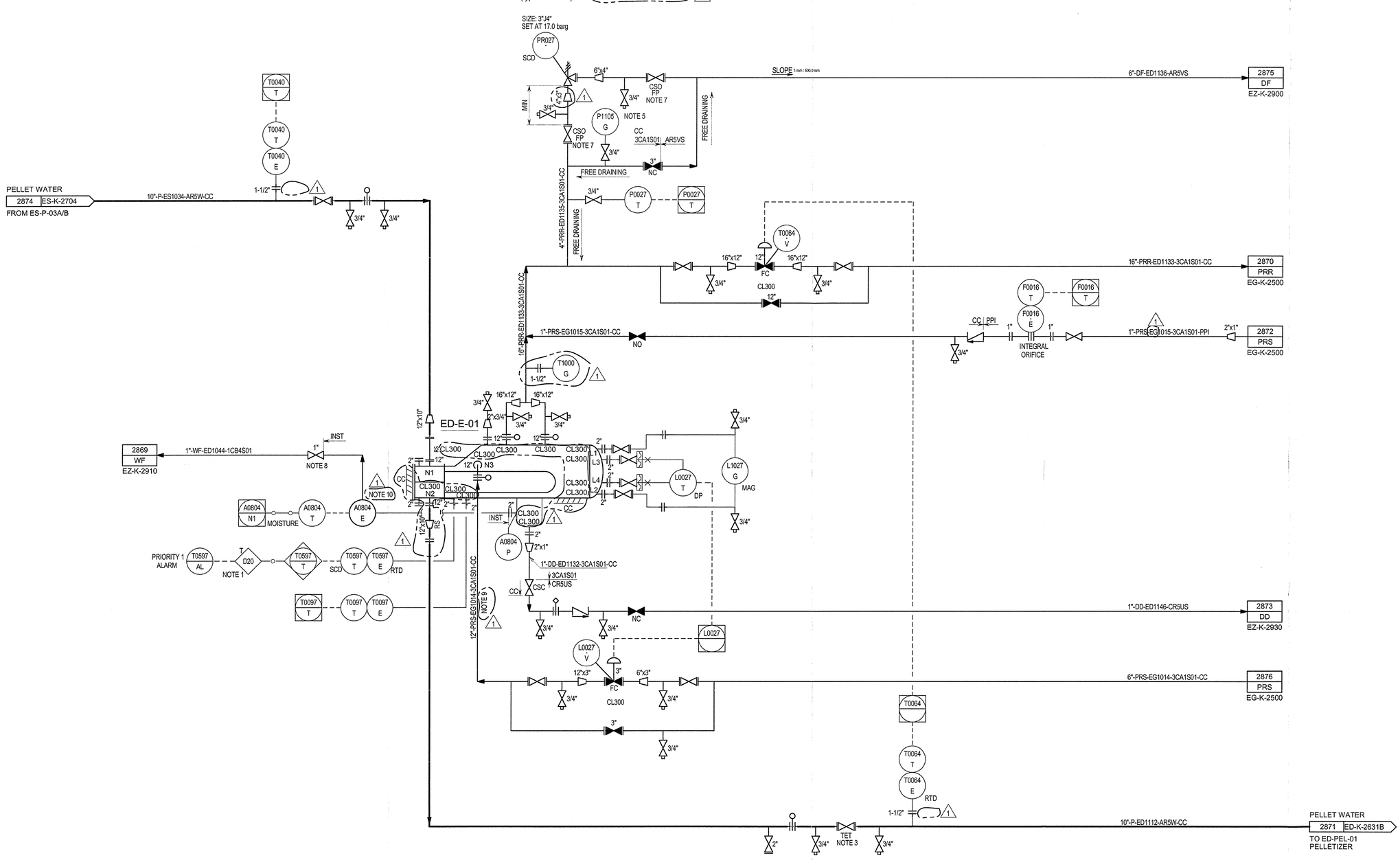
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HYDRAULIC DRIVE SYSTEM CHARGE FILTER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ED-K-2636	1 OF 1	2

ED-E-01

Service: PELLET WATER CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger AKU
Heat Duty: 4450 kW
Surface Area: 948 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 115.0 C / -48 ºC
Tube Design Pressure (Max / Min) @ Temperature.: 13.1 barg / x 50.0 C / -5 ºC
Materials of Construction (Shell/Tubes): CS / 304 SS
Trim (Shell/Tubes): VT-ED1302-3CA1S01-CC / -
Insulation (type/thickness): CC 110 mm / (TUBES: 85 mm) 1



NOTES:

1. PROCESS CRITICAL ALARM ON LOW TEMPERATURE. STOP PROPYLENE REFRIGERANT FLOW IF TEMP BELOW 0°C TO PREVENT FREEZING OF PELLET WATER.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
3. OUTLET VALVE TO BE TAGGED "DO NOT CLOSE WITHOUT DRAINING OF HEAT EXCHANGER."
4. NOT USED.
5. PG TO BE READABLE FROM BYPASS VALVE.
6. DELETED.
7. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
8. THREADED END VALVE.
9. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
10. ANALYZER LOCATED IN RACK EZ-AX-01 SEE DETAIL IN P&ID EZ-K-2955A. NULL

HOLDS:

1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
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Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
PELLET WATER CHILLER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ED-K-2640	1 OF 1	1

ED-X-04
HOT OIL SYSTEM PACKAGE

ED-E-11
Service: LOOP 1 HOT OIL ELECTRIC HEATER
Type: CIRCULATION
Heat Duty: 800 kW
Materials of Construction: CS
Insulation (type/thickness) :HC

ED-E-09
Service: LOOP 2 HOT OIL ELECTRIC HEATER
Type: CIRCULATION
Heat Duty: 440 kW
Materials of Construction: CS
Insulation (type/thickness) :HC

ED-E-08
Service: LOOP 2 OIL COOLER
Type: TEMA shell type E Shell & Tube heat exchanger (BEU)
Heat Duty: 30 kW
Surface Area: 8 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Tube Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): - / -
Insulation (type/thickness): PPI /

ED-E-10
Service: LOOP 1 OIL COOLER
Type: TEMA shell type E Shell & Tube heat exchanger (BEU)
Heat Duty: 400 kW
Surface Area: 6 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Tube Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): - / -
Insulation (type/thickness): PPI /

HOT OIL ED-K-2641C 7505 SPILL BACK TO ED-D-08
3"-HOS-ED4517-3CB1S01-PPI
HOT OIL ED-K-2641C 7506 TO ED-D-08
2"-HOS-ED4518-3CB1S01-PPI
7501 ED-K-2641C FROM ED-D-08
6"-HOR-ED4519-3CB1S01-PPI
7333 ED-K-2641A LOOP 1 RETURN
6"-HOR-ED1045-3CB1S01-HC
7512 ED-K-2641B FROM TO 403
2"-HOR-ED4562-3CB1S01-PPI
ED-K-2641B 7515
HOT OIL ED-K-2641C 7507 TO ED-D-08
2"-HOS-ED4521-3CB1S01-PPI
7128 CWR EU-K-2851
3"-CWR-ED1321-12CS1S01
7523 ED-K-2641B
3"-CWR-ED4592-12CS1S01
ED-K-2641B 7521
3"-CWS-ED4595-12CS1S01
7129 CWS EU-K-2851
3"-CWS-EU1388-12CS1S01
HOT OIL ED-K-2641C 7508 TO ED-D-08
2"-HOS-ED4525-3CB1S01-PPI
HOT OIL ED-K-2641C 7502 TO/FROM ED-D-08
6"-HOR-ED4558-3CB1S01-PPI
HOT OIL RETURN 7336 ED-K-2641A LOOP 2 RETURN
4"-HOR-ED1102-3CB1S01-HC
7499 ED-K-2641B FROM TO 404
HOT OIL OUTLET ED-K-2641B 7496 TO LOOP-4 FOR HEATING

ED-P-10 NOTES 1,6
ED-PM-10 NOTE 7
ED-P-09 NOTES 1,6
ED-PM-09 NOTE 7
ED-P-08 NOTES 1,6
ED-PM-08 NOTE 7
ED-E-11
ED-E-09
ED-E-10
ED-E-08
480 V 60 HZ
NOTE 12
NOTE 13
SPLIT RANGE
HOLD AA
HOLD AB
HOLD 4
HOLD 2 SET AT 10.5 barg
HOLD 53
HOLD 54
NOTE 4
NOTE 8

6"-HOS-ED4538-3CB1S01-HC
6"-HOS-ED4539-3CB1S01-PPI
6"-HOS-ED4540-3CB1S01
6"-HOS-ED4541-3CB1S01-HC
6"-HOS-ED4544-3CB1S01-PPI
6"-HOS-ED4542-3CB1S01-PPI
6"-HOS-ED4543-3CB1S01
6"-HOR-ED4520-3CB1S01-HC
6"-HOR-ED4327-3CB1S01-HC
6"-HOR-ED4528-3CB1S01-HC
6"-HOR-ED4529-3CB1S01-HC
6"-HOS-ED4522-3CB1S01-HC
6"-HOS-ED4523-3CB1S01-HC
6"-HOS-ED4524-3CB1S01-HC
1-1/2"-CWR-ED4534-12CS1S01
1-1/2"-CWS-ED4531-12CS1S01
1-1/2"-CWR-ED4535-12CS1S01
1-1/2"-CWS-ED4532-12CS1S01
1-1/2"-CWR-ED4536-12CS1S01
1-1/2"-CWS-ED4533-12CS1S01
3"x1-1/2"-CWR-ED4554-3CB1S01-HC
-CWR-ED4552-12CS1S01
-CWS-ED4551-12CS1S01
-CWS-ED4553-12CS1S01
-HOS-ED4548-3CB1S01-PPI
-HOS-ED4547-3CB1S01-PPI
-HOS-ED4549-3CB1S01-PPI
-HOS-ED4550-3CB1S01-PPI
6"-HOS-ED1125-3CB1S01-HC
4"-HOS-ED1116-3CB1S01-HC
4"-HOS-ED4545-3CB1S01-PPI
8"-CWS-EU1345-12CS1S01
3"-CWS-EU1098-12CS1S01
8"-CWR-ED1320-12CS1S01
3"-CWR-ED1117-12CS1S01

HOT OIL SUPPLY 7332 ED-K-2641A LOOP 1 SUPPLY
HOT OIL SUPPLY 7335 ED-K-2641A LOOP 2 SUPPLY
HOT OIL 7509 ED-K-2641C SPILL BACK TO ED-D-08
2900 CWS EU-K-2851
2899 CWR EU-K-2851
2880 CWS EU-K-2851
2881 CWR EU-K-2851
7504 ED-K-2641C TO E-D-08
7503 ED-K-2641C

NOTE 5

ED-P-09
Service: COMMON SPARE PUMP (LOOPS 1 AND 2)
Type: Horizontal centrifugal pump
Capacity: 175.0 m^3/hr
Differential Press.: 6.2 bar
Material of Construction: SS /INS:HC

ED-P-10
Service: LOOP 1 HOT OIL PUMP
Type: Horizontal centrifugal pump
Capacity: 175.0 m^3/hr
Differential Press.: 6.1 bar
Material of Construction: SS /INS:HC

ED-P-08
Service: LOOP 2 HOT OIL PUMP
Type: Horizontal centrifugal pump
Capacity: 175.0 m^3/hr
Differential Press.: 6.0 bar
Material of Construction: SS /INS:HC

NOTES:

1. SEALLESS CENTRIFUGAL PUMP.
2. LOOP 1 FOR JACKETS, TYP. 260°C
   LOOP 2 FOR DIE PLATE, TYP. 290°C
   LOOP 3 FOR SHAFT TEMPERING, TYP.120°C
   LOOP 3 FORVISCOSEALS, TYP.60°C
   LOOP 4 FOR EXTRUDER JACKET, TYP. 60°C TO 205°C
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
4. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
5. HOT OIL SYSTEM SHUTDOWN FOR ED-X-04.
6. PUMPS TO HAVE SUCTION STRAINERS WITH LOCAL SUCTON AND DISCHARGE PRESSURE GAUGES INSIDE THE ISOLATION BLOCKS.
7. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
8. VENT, DRAINS VALVE, ISOLATION VALVES AND LOCAL TEMPERATURE INDICATORS AT COOLING WATER SUPPLY AND RETURN LINES TO BE PROVIDED BY TR.
9. ISOLATION VALVES AT HOT OIL SUPPLY AND REUTRN LINES TO BE PROVIDED BY TR.
10. DELETED.
11. ALL DCS AND SIS ELEMENTS TO BE PROVIDED BY CONTRACTOR.
12. ED-E-11 CONSIST OF TWO ELECTRICAL STAGES/CIRCUITS. BOTH STAGES WORK SIMULTANEOUSLY, HOWEVER IN CASE OF TRIP, DEPENDING UPON THE TYPE OF FAILURE, THE EQUIPMENT COULD BE OPERATED WITH A SINGLE STAGE AFTER A MANUAL RESET OF THE POWER CONTROL PANEL.
13. A BY PASS FROM LOP 2 TO LOOP 1 CAN BE OPEN IN CASE ED.E.11 IS SHUT DOWN. THE FLOW CONTROL LOOP F0401 SHALL BE SET ACCORDING.

HOLDS:

2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
9. DELETED.
53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
AA. TRIP TO BE CONFIRMED DURING HAZOP.
AB. PROTECTIONS TO BE CONFIRMED DURING HAZOP.
AC. CONTROL VALVE REQUIREMENT TO BE CONFIRMED DURING HAZOP.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	22/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HOT OIL SYSTEM
LOOP 1 & 2

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2641	1 OF 1	2

NOTES:

1. VENT AND NITROGEN CONNECTION AT HEADER HIGN POINT.
2. DELETED
3. DRAIN TO BE PROVIDED AT ANY POCKET AT LOW PONT. HOT OIL SYSTEM WILL BE DRAINED BY DISPLACEMENT WITH NITROGEN BACK TO ED-D-08. STAGNANT LEGS WILL BE DRAINED FROM LOW POINT WITH A PORTABLE PUMP.
4. PIPE TO BE TAKEN FROM GRADE UP TO HOT OIL DRAIN HEADER FOR PORTABLE PUMP DISCHARGE CONNECTION FOR HOT OIL LINES DRAINING PURPOSES. LOCATE STRATEGICALLY SO THAT ANY DEAD LEG ON HOT OIL LINES CAN BE DRAINED WITH THE PORTABLE PUMP. ONE PIPE END AT GRADE IN THE DEVOLATILIZER AREA AND ANOTHER IN DGP AND PELLETIZER AREA.
5. NITROGEN DRIVEN DIAPHRAGM PORTABLE PUMP SUCTION AND DISCHARGE HOSES TO BE CONNECTED TO 3/4" RATING 300# RF KILLED CARBON STEEL FLANGES.

CONSTRUCTION SCOPE OF SUPPLY

(TO HOT OIL DRAIN HEADER CONNECTIONS)

3/4" CL300

P I

(IG)

RATED FLOW: 1 m3/h
DISCHARGE P.: 5 Barg
DESIGN T: 100 ºC

3/4" CL300

(FROM LON POINT DRAIN CONNECTIONS)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	22/10/2013	FINAL ISSUE REVISED	MCG	PSA	RAF
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	23/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HOT OIL SYSTEM
DISTRIBUTION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2641A	1 OF 1	2

ED-E-12
Service: LOOP 3 HOT OIL COOLER
Type: TEMA shell type E Shell & Tube heat exchanger (BEU)
Heat Duty: 320 kW
Surface Area: 16 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Tube Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes):
Insulation (type/thickness): PPI /

ED-E-13
Service: LOOP 4 HOT OIL COOLER
Type: TEMA shell type E Shell & Tube heat exchanger (BEU)
Heat Duty: 50 kW
Surface Area: 8 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Tube Design Pressure (Max / Min) @ Temperature.: 14.0 barg / x 320.0 C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes):
Insulation (type/thickness): PPI /

ED-X-04
Service: HOT OIL SYSTEM PACKGE

ED-P-11
Service: LOOP 3 HOT OIL PUMP
Type: Horizontal centrifugal pump
Capacity: 16.8 m^3/hr
Differential Press.: 5.1 bar
Material of Construction: SS

ED-P-12
Service: COMMON SPARE (LOOPS 3 AND 4) PUMP
Type: Horizontal centrifugal pump
Capacity: 30.0 m^3/hr
Differential Press.: 5.8 bar
Material of Construction: SS

ED-P-13
Service: LOOP 4 HOT OIL PUMP
Type: Horizontal centrifugal pump
Capacity: 30.0 m^3/hr
Differential Press.: 5.8 bar
Material of Construction: SS

NOTES:
1. SEALLESS CENTRIFUGAL PUMP.
2. LOOP 1 FOR: JACKETS, TYP. 260°C
   LOOP 2 FOR DIE PLATE, TYP. 290°C
   LOOP 3 FOR SHAFT TEMPERING, TYP.120°C
   LOOP 3 FOR VISCOSEALS, TYP. 60°C.
   LOOP 4 FOR EXTRUDER JACKET, TYP. 60°C TO 205°C
3. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
4. PUMPS TO HAVE SUCTION STRAINERS WITH LOCAL SUCTON AND DISCHARGE PRESSURE GAUGES INSIDE THE ISOLATION BLOCKS.
5. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:
1. CONTROL VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
AB. PROTECTIONS TO BE CONFIRMED DURING HAZOP.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	22/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF

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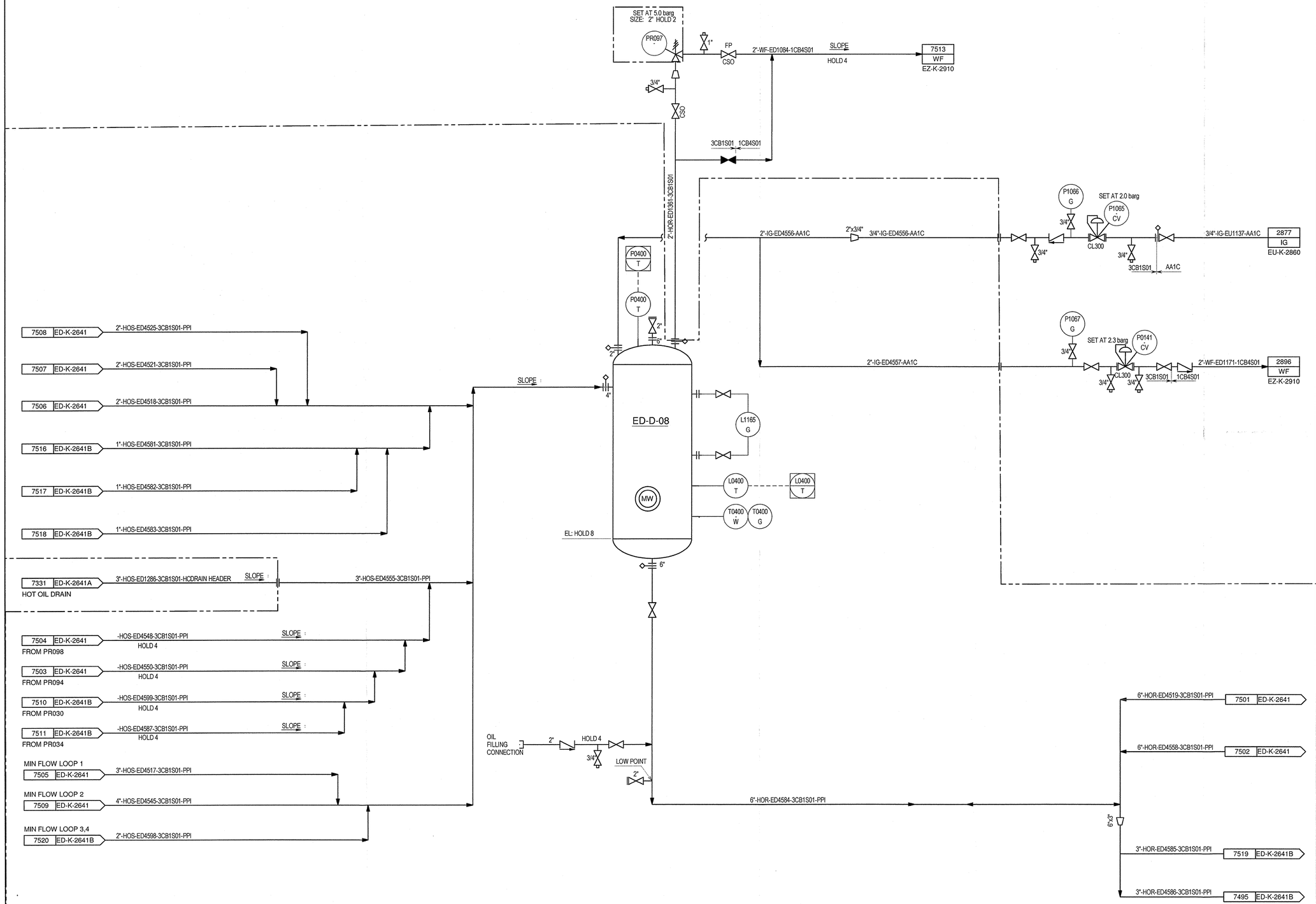
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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
HOT OIL SYSTEM
LOOP 3 & 4

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2641B	1 OF 1	0

ED-D-08
Service.: HOT OIL RESERVOIR
Dimension.: 1800.0 mm x 3850.0 mm
Design Pressure (Max / Min) @ Temperature.: 5.0 barg / x 320.0 C
Materials of Construction.: CS
Trim.: N/A
Insulation (type/thickness).: PPI /



HOLDS:

2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

8. BY VENDOR.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	22/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
HOT OIL SYSTEM
ED-X-O4 HOT OIL RESERVOIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2641C	1 OF 1	0

ED-T-03

Service.: WASH TOWER
Dimension.: 1700.0 mm x 16300.0 mm (BOTTOM ID: 3100mm)
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 200.0 C /-46°C
Materials of Construction.: LTCS
Trim.: VT-ED1303-1CA2S85-CC
Insulation (type/thickness).: CC / 140.0 mm

NOTES:

1. FLOW METER FOR FOULING SERVICE.
2. SIGHT GLASS WITH COVER, RESISTANT TO 200°C TO -46°C FLUSH MOUNTED.
3. HIGH LEVEL TO TRIP FGP AND SHUT OFF HEXANE FLUSH SUPPLY TO DEVOLATILIZER.
4. DELETED.
5. BLIND AFTER START-UP.
6. HORIZONTAL PORTION TO BE MINIMIZED.
7. LEVEL TRANSMITTER FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
8. 120 DEGREE TANGENTIAL FULL CONE SPRAY HEAD (LECHLER SZT 14).
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
10. RUPTURE DISC PROVIDED TO PREVENT THE INGRESS OF FLARE CONTENTS INTO ED-T-03.
11. MILD TRACING : NOT TO EXCEED 100°C.
12. TAKE OFF FROM TOP OF PIPE.
13. LOCATED ON TOP OF PIPE FOR FUTURE CLEANING AND INSPECTION.
14. DELETED.
15. DELETED.
16. BREAK OUT FLANGE FOR CLEANING.
17. SAFETY CRITICAL CHECK VALVE. TO MINIMIZE BACK FLOW, CREDIT IS TAKEN IN ER-PR-229 RELIEF VALVE SIZING.
18. OUTLET VALVE SHOULD BE TAGGED "DO NOT CLOSE WITHOUT DRAINING THE EQUIPMENT.
19. LINE USED FOR HEXANE FLUSH OPERATION ONLY.
20. DELETED.
21. DELETED.
22. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
23. BLOCK VALVE SHALL BE INSTALLED WIT THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
24. ENSURE BLINDING LINE ED1010 BEFORE STARTING FLUSHING OPERATION.
25. DELETED.
26. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
27. VALVES EDP0006V AND EDV0040V TO BE TRACED WITH LOW PRESSURE STEAM.

HOLDS:

4. DELETED.

ED-P-03A / B

Service: WASH TOWER SOLVENT PUMPS
Type: Horizontal centrifugal pump
Capacity: 264.0 m^3/hr
Differential Press.: 5.9 bar
Material of Construction: 316LSS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
WASH TOWER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2680	1 OF 1	1

ED-FIL-03A / B

Service: WASH TOWER SOLVENT FILTERS
Type: Filter (BASKET OR CARTRIDGE)
Capacity: 261.6 m^3/hr
Design Pressure (Max / Min) @ Temperature: 21.0 barg / -1.0 barg x 200.0 C / -46ºC
Differential Pressure: 1.1 bar
Material of Construction: LTCS
TRIM: (A) : VT-ED1304 3CA2S85 CC / (B) VT-ED1305 3CA2S85 CC
NOTES 24 1 1 1

ED-E-03

Service: WASH TOWER SOLVENT CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger
Heat Duty: 719 kW
Surface Area: 481 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 115.0 C / -48 °C
Tube Design Pressure (Max / Min) @ Temperature.: 21.0 barg / -1.0 barg x 200.0 C / -46.0 C
Materials of Construction (Shell/Tubes): CS \ LTCS
Trim (Shell/Tubes): VT-ED1306-3CA1S01-CC
Insulation (type/thickness): CC 175mm / (CHANNEL: 175mm) 1

SET AT 17.0 barg
SIZE 3"x4"
PR019
SCD
6"x4"
NOTE 22
FP
CSO
3/4"
MIN
NOTE 22
SLOPE 1 mm : 500.0 mm
6"-DF-ED1347-AR5VS
2901 DF EZ-K-2900
3"-P-ED1352-3CA1S01-CC
FREE DRAINING
T1065 G
1-1/2"
P0118 T
P0118 T
3/4"
NC
1"-PRS-EG1017-3CA1S01-PPI
2"x1"
CC PPI
HOT GAS
2905 PRS EG-K-2500
12"-PRR-ED1239-3CA1S01-CC
2904 PRR EG-K-2500
T1064 G
2"
3/4"
2"x3/4"
CL300
12"
N4
ED-E-03
N3
N2
N1
10"x8"
10"
8"
D
2"
2"x1"
L1
L2
L3
L4
L0032 T DP
L1032 G MAG
L0032
T0157 T
T0157 T
T0157 E
4"x8"
T1016 G
1-1/2"
L0032 V
V1
FC
CL300
8"x2"
3"x2"
NOTES 4,23
3"-PRS-EG1016-3CA1S01-CC
2903 PRS EG-K-2500
1"-DD-ED1137-3CA1S01-CC
3CA1S01 CR5US
NC
CC
1"-DD-ED1236-CR5US
2914 DD EZ-K-2930
SOLVENT
ED-K-2680 4167
TO WD-T-03 WASH TOWER
8"-P-ED1225-3CA2S85-CC
HEXANE FLUSH RETURN
3"-P-ED1345-3CB2S01-HC
NOTE 11 TL-100.0 C
3973 P ER-K-2291
HEXANE FLUSH SUPPLY
3"-P-ER1272-3CA2S85-HC
NOTE 11 TL-100.0 C
4122 P ER-K-2292
P1081 G
3CB2S01
3CA2S85
TL-100.0 C
CC
V1
N1
N2
NOTE 24
D1
2"
SOLVENT
4168 ED-K-2680
FROM ED-P-03A/B WASH TOWER SOLVENT PUMPS
8"-P-ED1229-3CA2S85-CC
8"-P-ED1234-3CA2S85-CC
ED-FIL-03A
P0117 DT
8"-P-ED1233-3CA2S85-CC
P1082 G
ED-FIL-03B
8"-P-ED1235-3CA2S85-CC
3CA2S85
3CB2S01
HEXANE FLUSH SUPPLY
3"-P-ER1273-3CA2S85-HC
NOTE 11 TL-100.0 C
2912 P ER-K-2292
HEXANE FLUSH RETURN
3"-P-ED1346-3CB2S01-HC
NOTE 11 TL-100.0 C
2907 P ER-K-2291
3CB2S01
3CA2S85
CC
3/4"
HEXANE FLUSH RETURN
3"-P-ED1344-3CB2S01-HC
NOTE 11 TL-100.0 C
2906 P ER-K-2291
F0046 T
F0046 T
1-1/2"x1"
1"
C
NOTE 1
F0046 E
1-1/2"-P-ED1237-3CA2S85-CC
L0031 V1
FC CL300
3CA2S85 1CA2S85
1"
1-1/2"x1"
SIGNAL
ED-K-2680 4169
FROM ED-L0031
BOTTOM
2913 ET-K-2410
1-1/2"-P-ED1237-1CA2S85-CC
TO ET-T-10 ISOHEXANE PURIFICATION TOWER

NOTES:

1. FLOW METER FOR FOULING SERVICE.
2. DELETED.
3. DELETED.
4. SUPPORT FOR SLUG FLOW.
5. DELETED.
6. DELETED.
7. DELETED.
8. DELETED.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
10. DELETED.
11. MILD TRACING : NOT TO EXCEED 100°C.
12. DELETED.
13. DELETED.
14. DELETED.
15. DELETED.
16. DELETED.
17. DELETED.
18. DELETED.
19. DELETED. 1
21. DELETED.
22. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
23. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1
24. CAUTION: EQUIPMENT MOST BE COMPLETELY DRAIMED AFTER OPERATION (DRY VESSEL).

HOLDS:

1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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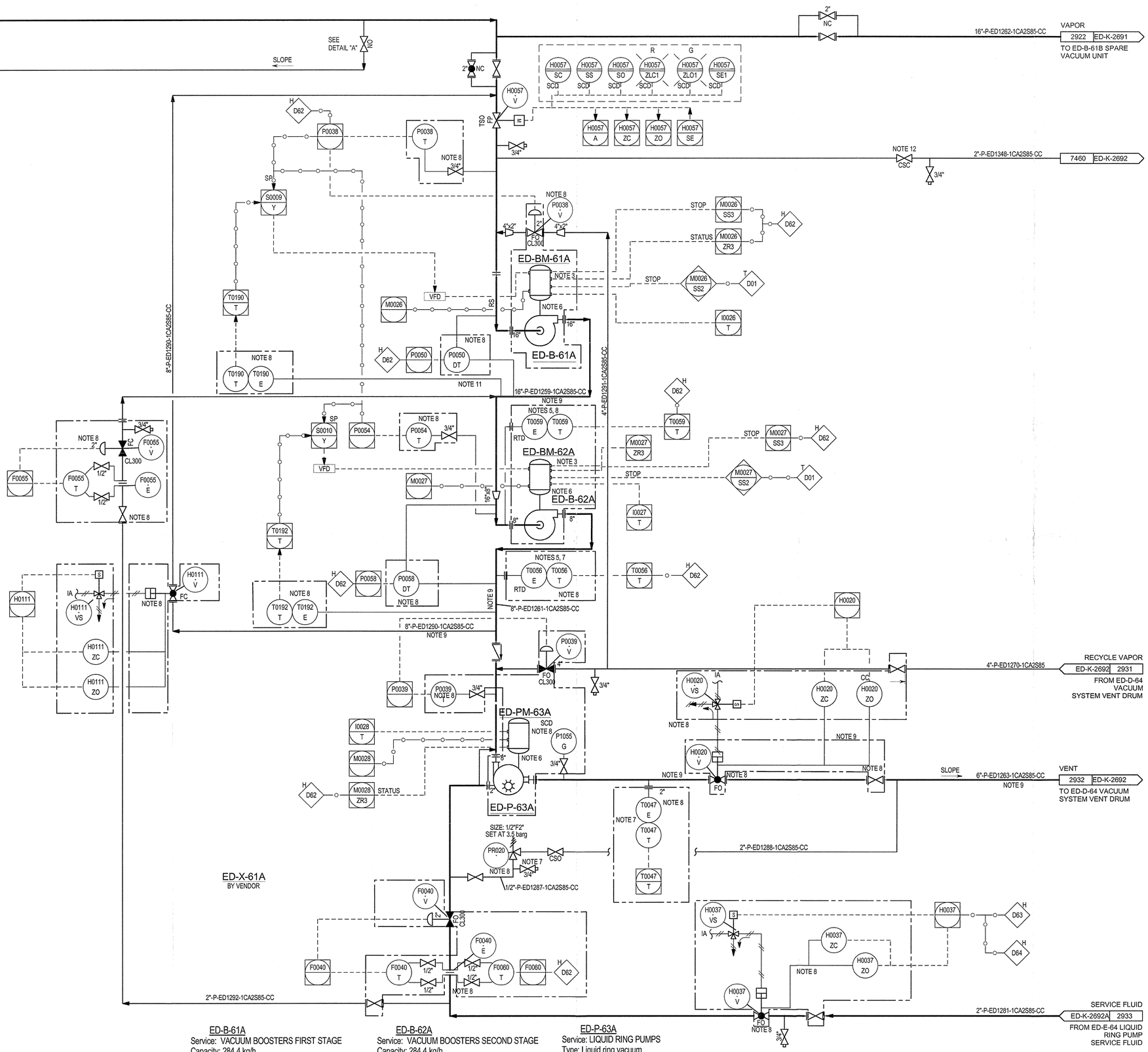
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
WASH TOWER SOLVENT FILTERS & CHILLER 1

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ED-K-2680A	1 OF 1	1



ED-B-61A
Service: VACUUM BOOSTERS FIRST STAGE
Capacity: 284.4 kg/h
Differential Press: 0.0 bar (42.4 mbar)
Power Requirements: 15 kW
Material of Construction: ASTM A352LCB

ED-B-62A
Service: VACUUM BOOSTERS SECOND STAGE
Capacity: 284.4 kg/h
Differential Press: 0.0 bar (90.0 mbar)
Power Requirements: 13 kW
Material of Construction: ASTM A352LCB

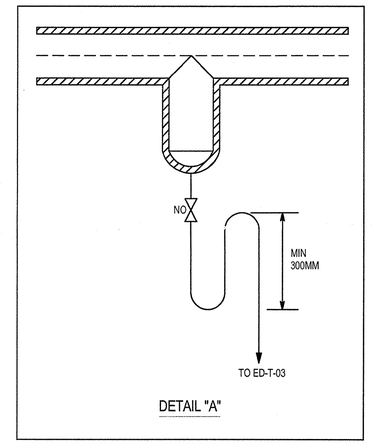
ED-P-63A
Service: LIQUID RING PUMPS
Type: Liquid ring vacuum
Capacity: 284.4 kg/h
Differential Press.: 1.3 bar
Material of Construction: SS 316

NOTES:

1. NOT USED.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
3. VFD MOTOR.
4. NOT USED.
5. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
7. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
8. TO BE PROVIDED LOOSE BY VACUUM PACKAGE VENDOR.
9. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
10. DELETED.
11. INJECTION THROUGH SPRAY NOZZLE ON TOP OF PIPE.
12. VALVE TO BE OPENED ONLY DURING WASH TOWER DEFOULING.

HOLDS:

2. DELETED.
4. DELETED.
8. DELETED.
53. DELETED.
54. DELETED.



DETAIL "A"

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	ZOPP	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE DOR DESIGN	MCG	PSA	CTR

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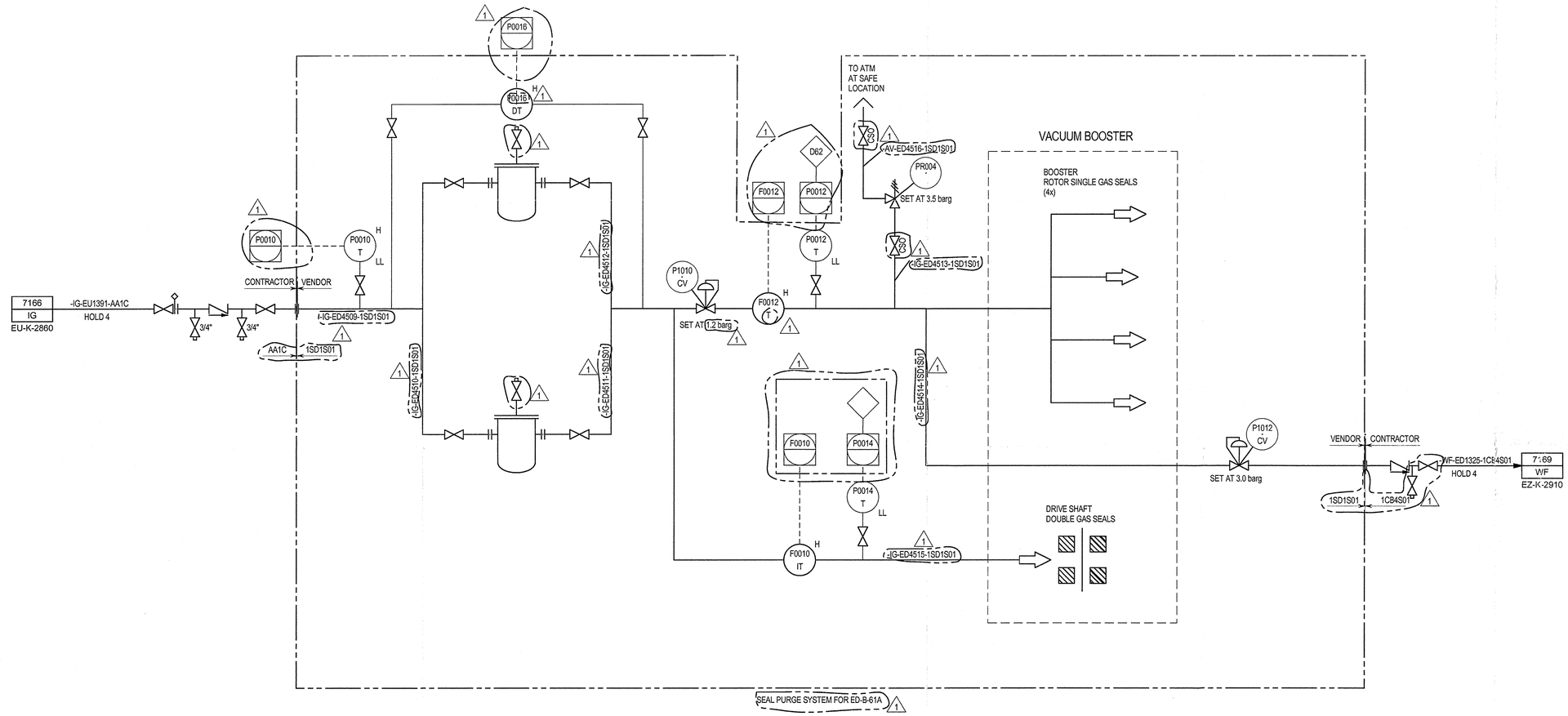
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
VACUUM UNIT

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2690	1 OF 1	2



NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

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1	13/09/2013	FINAL ISSUE	MCG	DRS	RAF
0	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF

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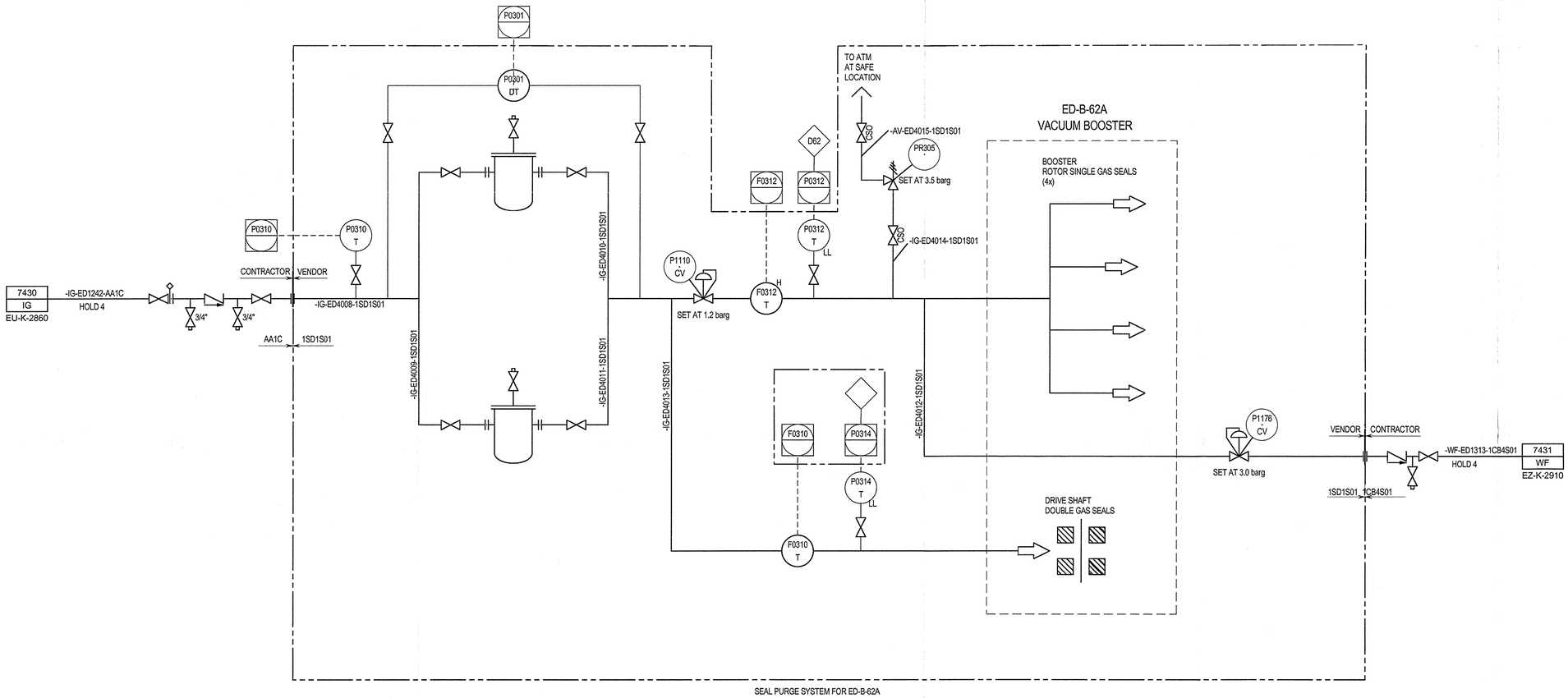
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
VACUUM UNIT
NITROGEN AUXILIARY SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ED-K-2690A	1 OF 1	1



SEAL PURGE SYSTEM FOR ED-B-62A

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
VACUUM UNIT
NITROGEN AUXILIARY SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ED-K-2690B	1 OF 1	0

VAPOR
2922 ED-K-2690
FROM ED-T-03
WASH TOWER

16"-P-ED1262-1CA2S85-CC

H D62 P0056

SP S0011 Y

VFD

T0191 T

NOTE 7 T0191 T T0191 E

8"-P-ED1295-1CA2S85-CC

P0056 T NOTE 7 3/4"

TSO

H0058 V

R G

H0058 SC SCD | H0058 SS SCD | H0058 SO SCD | H0058 ZLC1 SCD | H0058 ZLO1 SCD | H0058 SE1 SCD

H0058 A | H0058 ZC | H0058 ZO | H0058 SE

NOTE 11 CSC 3/4"

2"-P-ED1349-1CA2S85-CC 7461 ED-K-2692

NOTE 7 P0056 V

4"x2" 2" 4"x2" FO CL300

ED-BM-61B

M0029

H D62 P0051 P0051 DT

NOTES 2,5

RS 16" 16"

ED-B-61B

STOP M0029 SS3 H D62

STATUS M0029 ZR3

STOP M0029 SS2 T D01

I0029 T

16"-P-ED1284-1CA2S85-CC

NOTE 8

NOTE 10

3/4"

NOTE 7 P0057 P0057 T 3/4"

SP S0012 Y

T0193 T

NOTE 7 F0056 V F0056 E CL300

F0056 F0056 T

VFD

NOTES 4, 7 T0060 E T0060 T RTD

H D62 T0060 T

STOP M0030 ZR3 M0030 SS3 H D62

16"x8"

ED-BM-62B

M0030

STOP M0030 SS2 T D01

I0030 T

NOTES 2,5

ED-B-62B

8" 8"

T0193 T T0193 E

NOTE 7

NOTE 7 P0059 DT P0059 H D62

4"-P-ED1296-1CA2S85-CC

S

IA

NOTE 7

FC

H0112

H0112 VS H0112 V

H0112 ZC

H0112 ZO

8"-P-ED1285-1CA2S85-CC

NOTE 8

NOTES 4, 7 T0057 E T0057 T RTD

T0057 T H D62

8"-P-ED1295-1CA2S85-CC

NOTE 8

P0040 V

4" FO CL300

NOTE 7

P0040 P0040 T NOTE 7 3/4"

3/4"

I0031 T

ED-PM-63B

NOTE 5

M0031

P1058 G SCD

STATUS M0031 ZR3

8"

2"

ED-P-63B

H D62

SET AT 3.5 barg

SIZE: 1-1/2"F2"

PR021 NOTE 6 CSO

3/4"

NOTE 6

1-1/2"-P-ED1298-1CA2S85-CC

2"-P-ED1297-1CA2S85-CC

ED-X-61B

BY VENDOR

F0041 V

IFC2 CL300

F0041 E

F0041 F0041 T NOTE 7 1/2" 1/2" F0061 T F0061 H D62

H0038 VS IA S

H0038 ZC

H0038 ZO

H0038 V

FC NOTE 7 3/4" NOTE 7

H0038 H D63 H D64

2"-P-ED1280-1CA2S85-CC

SERVICE FLUID

ED-K-2692A 2934

FROM ED-E-64 LIQUID RING SERVICE FLUID

4"-P-ED1269-1CA2S85

RECYCLE VAPOR

ED-K-2692 2940

FROM ED-D-64 VACUUM SYSTEM VENT DRUM

H0021 VS IA

CC

H0021

NOTE 8

H0021 ZC H0021 ZO

H0021 V

NOTE 7 NOTE 7

FO

SLOPE

6"-P-ED1264-1CA2S85-CC

NOTE 8

VENT

2941 ED-K-2692

TO ED-D-64 VACUUM SYSTEM VENT DRUM

2" NOTE 7 T0048 E T0048 T

T0048 T

2"-P-ED1299-1CA2S85-CC

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
2. VFD MOTOR.
3. NOT USED.
4. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
5. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
6. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELLOW THE HORZONTAL.
7. TO BE PROVIDED LOOSE BY VACUUM PACKAGE VENDOR.
8. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
9. DELETED.
10. INJECTION THROUGH SPRAY NOZZLE ON TOP OF PIPE.
11. VALVE TO BE OPENED ONLY DURING WASH TOWER DEFOULING

HOLDS:

2. DELETED.
4. DELETED.
8. DELETED.
53. DELETED.
54. DELETED.

ED-B-61B
Service: VACUUM BOOSTERS FIRST STAGE
Capacity: 284.4 kg/h
Differential Press: 0.0 bar (42.4 mbar)
Power Requirements: 15 kW
Material of Construction: ASTM A352 LCB

ED-B-62B
Service: VACUUM BOOSTERS SECOND STAGE
Capacity: 284.4 kg/h
Differential Press: 0.0 bar (90.0 mbar)
Power Requirements: 13 kW
Material of Construction: ASTM A352 LCB

ED-P-63B
Service: LIQUID RING PUMPS
Type: Liquid ring vacuum
Capacity: 284.4 kg/h
Differential Press.: 1.3 bar
Material of Construction: SS 316

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAS
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RVE
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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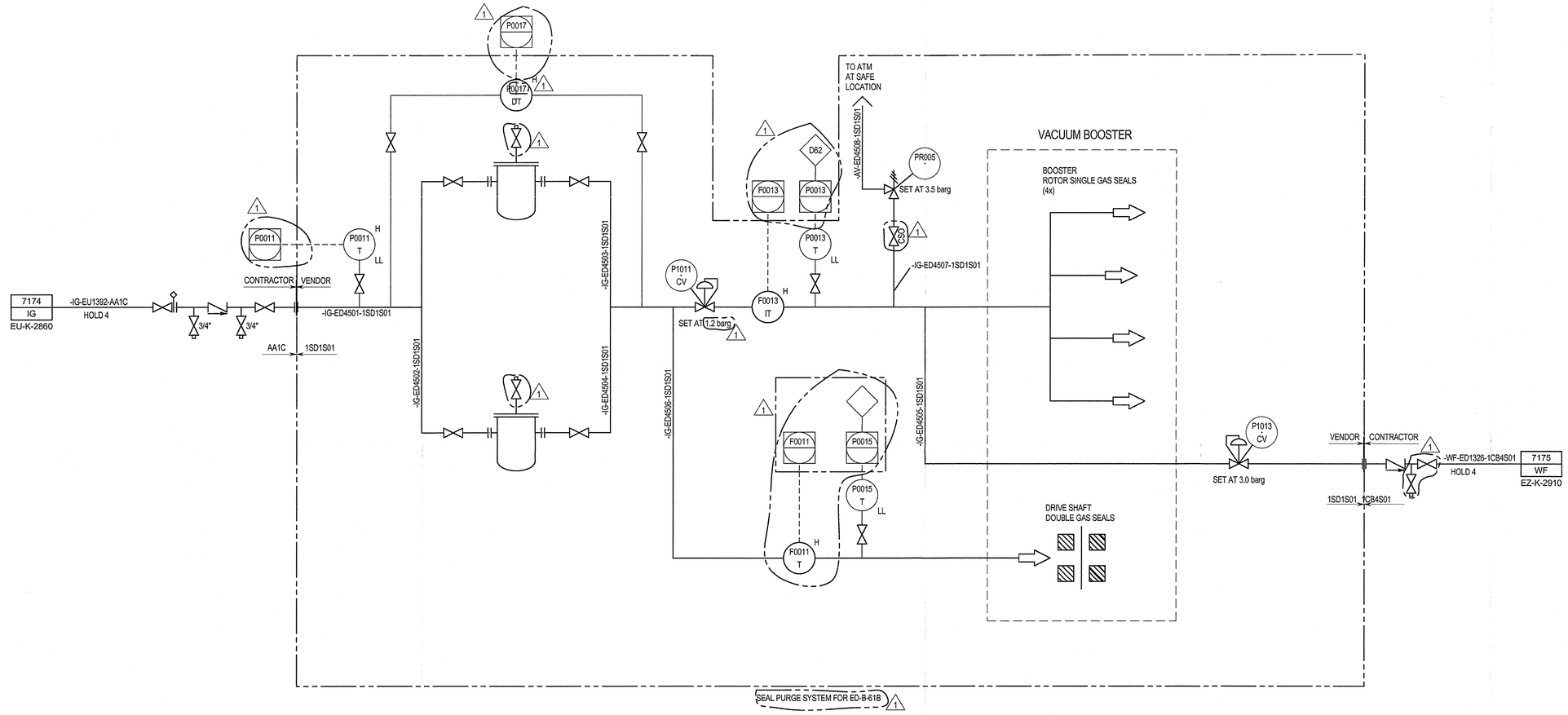
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
SPARE VACUUM UNIT

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2691	1 OF 1	2



NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
0	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF

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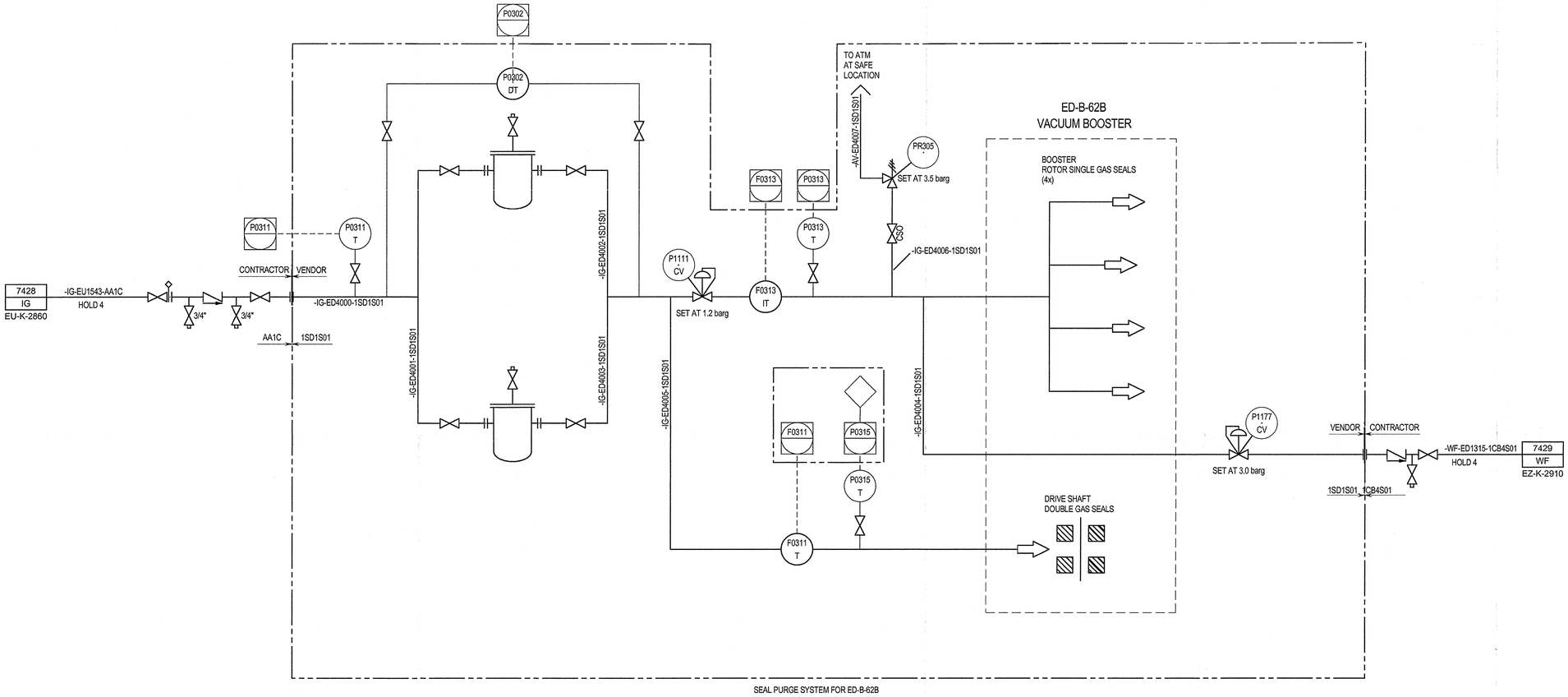
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
SPARE VACUUM UNIT
NITROGEN AUXILIARY SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2691A	1 OF 1	1



SEAL PURGE SYSTEM FOR ED-B-62B

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	13/09/2013	FINAL ISSUE	MCG	DRF	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
SPARE VACUUM UNIT
NITROGEN AUXILIARY SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

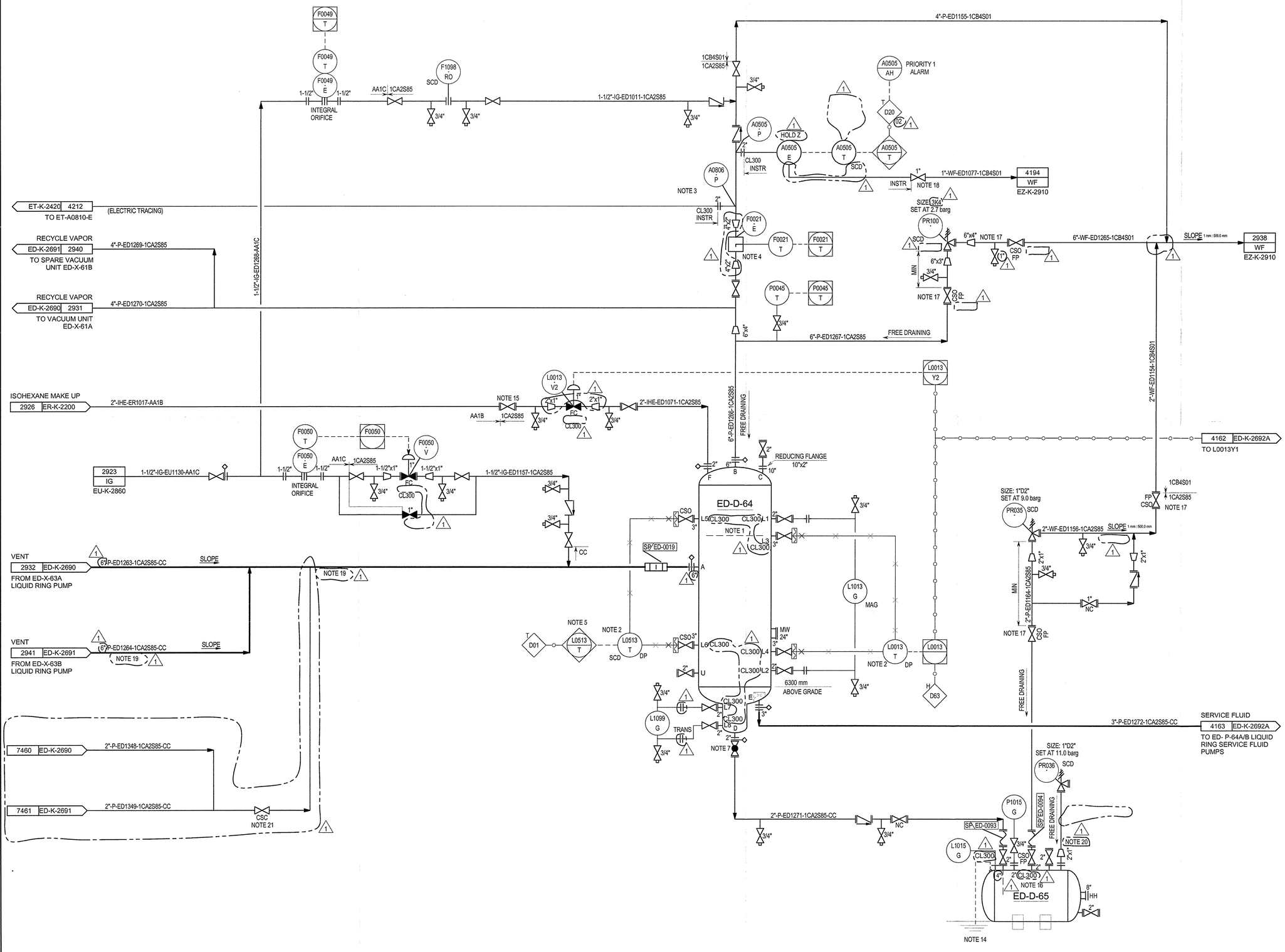
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ED-K-2691B	1 OF 1	0

ED-D-64

Service.: VACUUM SYSTEM VENT DRUM
Dimension.: 1200.0 mm x 2300.0 mm
Design Pressure (Max / Min) @ Temperature.: 3.5 barg / -1.0 barg x 150.0 C /-46ºC
Materials of Construction.: LTCS
Trim.: VT-ED1307-1CA2S85-CC
Insulation (type/thickness).: CC / 90.0 mm

ED-D-65

Service.: MOBILE WASTE WATER DRAIN DRUM
Dimension.: 700.0 mm x 1300.0 mm
Design Pressure (Max / Min) @ Temperature.: 11.0 barg / -1.0 barg x 150.0 C /-46ºC
Materials of Construction.: LTCS
Trim.: VT-ED1308-1CA2S85-
Insulation (type/thickness).: / NONE



NOTES:

1. MAXIMUM LIQUID LEVEL IN DRUM MUST BE (1) BELOW BOTTOM OF PIPE FROM LIQUID RING PUMP. (TANGENTIAL)
2. LEVEL TRANSMITTER FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
3. TWO STREAM GC ANALYZER HANDLES SAMPLES FROM P&ID'S ET-K-2420.
4. LOW PRESSURE DROP (ANNUBAR TYPE).
5. HIGH LEVEL TO TRIP ALL FOUR VACUUM BLOWERS (ED-B-61A/B AND ED-B-62A/B).
6. NOT USED.
7. PROVIDE SPRING-LOADED BALL VALVE.
8. DELETED.
9. NOT USED.
10. DELETED.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
12. DELETED.
13. NOT USED.
14. DRUM TO BE TRANSFERRED TO THE THIRD PARTY TO TREAT THE WASTE LIQUID BY FORK TRUCK.
15. ED-PR-100 SIZING TAKES INTO ACCOUNT ED-P-64 PUMP CURVE (OSBL) (1)
16. A GROUNDING CONNECTION IS REQUIRED FOR AVOIDING POTENTIAL STATIC ACCUMULATION AND DISCHARGE.
17. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
18. THREADED END VALVE.
19. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
20. PRV IS FORTVALE TYPE.
21. VALVE TO BE OPENED ONLY DURING WASH TOWER DEPOULING. (1)

HOLDS:

1. DELETED. (1)
2. DELETED. (1)
52. DELETED. (1)
53. DELETED.
54. DELETED. (1)
Z. ANALYZER LOCATED IN RACK EZ-AX-11. SEE DETAIL IN P&ID EZ-K-2955A OR IN SHELTER EZ-AS-01. PENDING VENDOR SELECTION. (1)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
LIQUID RING SERVICE FLUID

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2692	1 OF 1	1

ED-E-64

Service: LIQUID RING PUMP SERVICE FLUID CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger BKU
Heat Duty: 125 kW
Surface Area (14) m^2 1
Shell Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 115.0 C / -46ºC
Tube Design Pressure (Max / Min) @ Temperature.: 13.1 barg / -1.0 barg x 150.0 C / -46ºC
Materials of Construction (Shell/Tubes): (CS) / LTCS
Trim (Shell/Tubes): VT-ED1309-3CA1S01-CC / -
Insulation (type/thickness): CC / (135mm / (CHANNEL:110mm)) 1

SERVICE FLUID
ED-K-2690 2933
TO VACUUM UNIT ED-X-61A
2"-P-ED1281-1CA2S85-CC

SERVICE FLUID
ED-K-2691 2934
TO SPARE VACUUM UNIT ED-X-61B
2"-P-ED1280-1CA2S85-CC

2"-P-ED1281-1CA2S85-CC
4"x2"
T0123 E
T0123 T
RTD
SET AT 17.0 barg
SIZE: 1-1/2" DP
PR017
SCD
MIN.
2"x1-1/2"
3/4"
NOTE 19
CSO
FP
4"x2"
NOTE 19
SLOPE 1 mm : 500.0 mm
4"-DF-ED1279-AR5VS
2936
DF
EZ-K-2900
T0123
2"-P-ED1282-3CA1S01-CC
FREE DRAINING
P0052 T
P0052
P0052 V
4"-PRR-ED1278-3CA1S01-CC
2925
PRR
EG-K-2500
EQ
4"
CC
PPI
NC
1"-PRS-EG1019-3CA1S01-PPI
2"x1"
HOT GAS
2924
PRS
EG-K-2500
CSO
T1007 G
RS
ED-E-64
CL300 N4
CL300 N3
CL300 N2
CL300 N1
CL300 D
L1014 G
MAG
L0014 T
DP
L0014
AA1E 1CA2S85
2927
SB
EZ-K-2950
2"-SB-ED1149-AA1E
NC
2"-SB-ED1150-1CA2S85-CC
1"-DD-ED1289-3CA1S01-CC
3CA1S01
CR5US
T1008 G
1"-DD-ED1277-CR5US
2937
DD
EZ-K-2930
NOTES 8,20
2"-P-ED1275-1CA2S85-CC
L0014 V
FC
2"-PRS-EG1018-3CA1S01-CC
2929
PRS
EG-K-2500
F0051 T
F0051 E
INTEGRAL ORIFICE
L0013 Y1
SIGNAL
ED-K-2692 4162
FROM L0013
L0013 V1
LIQUID RING PUMP CONDENSATE
3/4"-P-ED1276-1CA2S85-CC
2935 ET-K-2410
TO ET-T-10 ISOHEXANE PURIFICATION TOWER

SERVICE FLUID
4163 ED-K-2692
FROM ED-D-64 VACUUM SYSTEM VENT DRUM
3"-P-ED1272-1CA2S85-CC
T0124 T
T0124 T
T0124 E
2"-P-ED1274-1CA2S85-CC
3"-P-ED1273-1CA2S85-CC
P1103 G
M0032
ED-P-64A
ED-PM-64A
NOTE 18
SP ED-0020
3"-SB-ED1143-1CA2S85
3"-O-ED1131-12CS1S01
1CA2S85 AA1E
1"x3/4"
1"-SB-ED1151-AA1E
2928
SB
EZ-K-2950
DRAIN TO MIXED OIL DRUM
P1104 G
M0033
ED-P-64B
ED-PM-64B
SP ED-0021
3"-SB-ED1144-1CA2S85
MIN.
3"-O-ED1134-12CS1S01
2"-SB-ED1152-AA1E
2930
SB
EZ-K-2950
DRAIN TO MIXED OIL DRUM

ED-P-64A / B

Service: LIQUID RING SERVICE FLUID PUMPS
Type: Horizontal centrifugal pump
Capacity: 12.2 m^3/hr
Differential Press.: 3.1 bar
Material of Construction: 316LSS 1

NOTES:

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.
6. NOT USED.
7. DELETED
8. SUPPORT FOR SLUG FLOW.
9. NOT USED.
10. DELETED.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ED UNLESS OTHERWISE STATED.
12. DELETED.
13. NOT USED.
14. DELETED.
15. DELETED.
16. DELETED.
17. DELETED.
18. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
19. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
20. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	IRAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/09/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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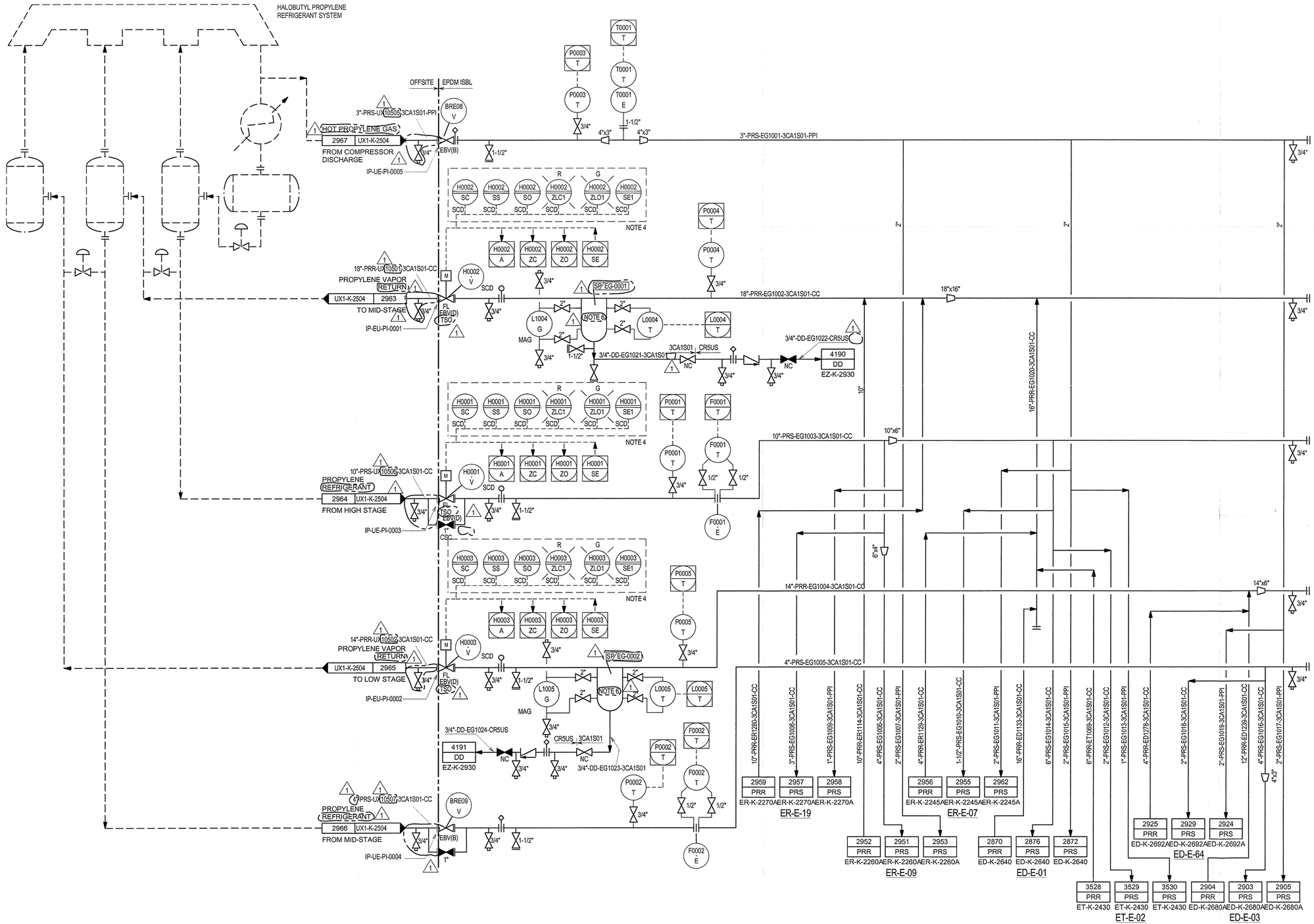
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
DEVOLATILIZATION
LIQUID RING SERVICE FLUID PUMPS & CHILLER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ED-K-2692A	1 OF 1	1



NOTES:

1. DELETED.
2. DELETED.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EG UNLESS OTHERWISE STATED.
4. EBV LOCAL PANEL LOCATED MINIMUM 12M AWAY FROM THE VALVE AT GRADE.
5. DELETED.
6. SP-EG-0001 SIZE: 10" DIAMETER X 600 MM LENGTH. SP-EG-0002 SIZE: 10" DIAMETER X 600 MM LENGTH. (1)

HOLDS:

38. DELETED. (1)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
REFRIGERATION
REFRIGERATION SYSTEM (DISTRIBUTION)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EG-K-2500	1 OF 1	1

EL-E-02

Service: HPS FEED STEAM HEATER
Type: TEMA shell type X Shell & Tube heat exchanger
Heat Duty: 5353 kW
Surface Area: 1613 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 112.0 barg / -1.0 barg x 425.0 C / 0 °C
Tube Design Pressure (Max / Min) @ Temperature.: 145.0 barg / x 260.0 C / 0 °C
Materials of Construction (Shell/Tubes): CR-MO / CS 1
Trim (Shell/Tubes): J VT-EL1072-15CB1S87-HC
Insulation (type/thickness): HC 75.0 mm (CHANNEL: 60.0mm)

EL-E-01

Service: HPS FEED/LEAN PHASE EXCHANGER 1
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 2396 kW
Surface Area: 841 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 112.0 barg / x 260.0 C /0 C
Tube Design Pressure (Max / Min) @ Temperature.: 145.0 barg / x 227.0 C /0 C
Materials of Construction (Shell/Tubes): CS / CS NOTE 11
Trim (Shell/Tubes): VT-EL1075-9CB1S87-HC VT-EL1070-15CB1S87-HC
Insulation (type/thickness): HC 60.0 mm (CHANNEL: 35.0mm) 1

EL-E-11

Service: HPS FEED/LEAN PHASE EXCHANGER 2
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 2396 kW
Surface Area: 841 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 112.0 barg / x 260.0 C / 0 °C
Tube Design Pressure (Max / Min) @ Temperature.: 145.0 barg / x 227.0 C / 0 °C
Materials of Construction (Shell/Tubes): CS / CS NOTE 11
Trim (Shell/Tubes): VT-EL1076-9CB1S87-HC VT-EL1073-15CB1S87-HC
Insulation (type/thickness): HC 60.0 mm (CHANNEL: 35.0mm) 1

REACTOR EFFLUENT
3139 ER-K-2280
FROM ER-D-12
QUENCH MIXER

HEXANE FLUSH SUPPLY
3136 P
ER-K-2292

TO ER-D-30
CEMENT BLOWDOWN DRUM
3140 P
ER-K-2291

3134 HC
EU-K-2830

SOLVENT
3229 EL-K-2301
TO EL-E-03
LEAN PHASE
WATER COOLER

3137 WF
EZ-K-2910

3138 WF
EZ-K-2910

SOLVENT
EL-K-2310 3290
FROM EL-D-01
HIGH PRESSURE
SEPARATOR

3135 HS
EU-K-2830

REACTOR EFFLUENT
3291 EL-K-2310
TO EL-D-01
HIGH PRESSURE
SEPARATOR

DRAIN
TO ER-D-30
3141 P
ER-K-2291

PCSRS

HOLD 12

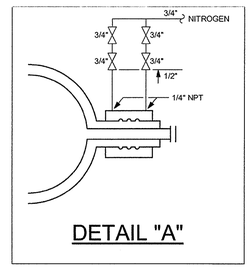
NOTES:

1. BREAKOUT FLANGES FOR REMOVABLE SPOOLS.
2. VALVE CAR SEALED OPEN TO PROTECT EL-E-01 AND EL-E-11 FOR FIRE CONTINGENCY USING HIGH PRESSURE SEPARATORS DEPRESSURING VALVE.
3. STEAM TRAP BYPASS IS CAR SEALED CLOSED TO MINIMIZE CEMENT FLOW INTO CONDENSATE SYSTEM IN THE EVENT OF EL-E-02 TUBE RUPTURE TO MINIMIZE POTENTIAL OVER PRESSURE OF DONWSTREAM CONDENSATE DRUM. ALSO BYPASS VALVE SHOULD NOT BE OVERSIZED.
4. MILD TRACING; NOT TO EXCEED 100°C.
5. PIPING LAYOUT TO BE SYMMETRICAL.
6. LOCATE EL-T0028 AT A MINIMUM DISTANCE FROM EL-E-01 AND EL-E-11.
7. VALVES TO BE ACCESSIBLE FOR THROTTLING TO BALANCE FLOW BETWEEN EL-E-01 AND EL-E-11.
8. TEMPERATURE IS PROCESS CRITICAL REDUNDANT TEMPERATURE INDICATION PROVIDED FOR PROCESS RELIABILITY.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH EL UNLESS OTHERWISE STATED.
10. DELETED.
11. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MOIDIFY WITHOUT APPROVAL."
12. DESIGN CONDITIONS SHALL BE DUAL CONDITIONS AS BELOW:
    1) 112 barg @ 260/0 °C
    2) 51 barg @ 425/0 °C
13. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
14. THERMAL RELIEF VALVE.
15. N2 BOTTLE SPECIFICATION:
    300mm DIA x 600mm L; CS
    D.P. = 123.2 barg, D.T. = 260/0 °C
    TO BE CONSTRUCTED FROM PIPING COMPONENTS.
16. DELETED.
17. DELETED.
18. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
19. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

3. DELETED. 1
12. NUMBERS OF STEAM TRAPS REQUIRED TO BE DEFINED DURING DETAIL ENGINEERING.

1



DETAIL "A"

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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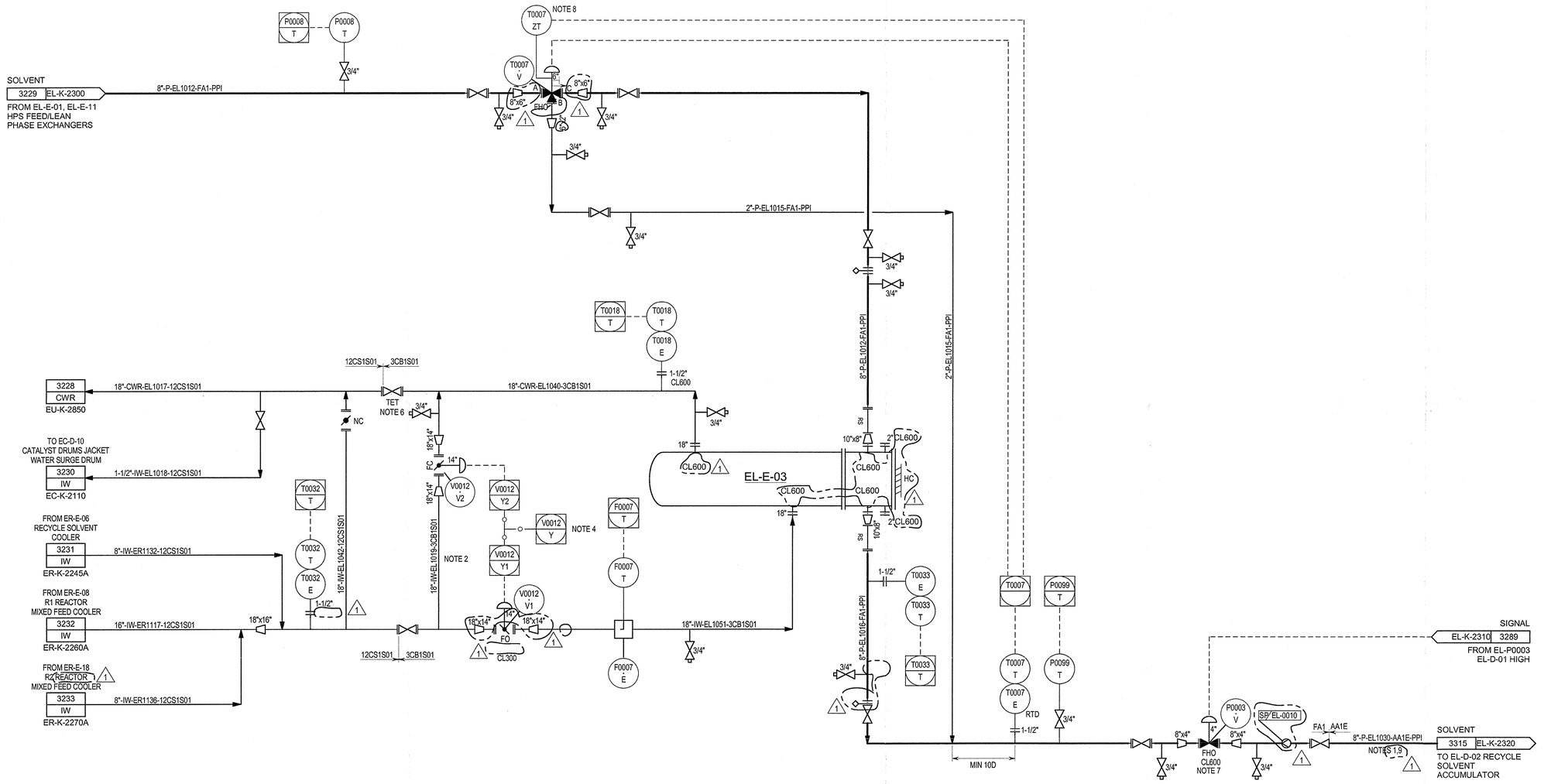
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LEAN PHASE RECYCLE
CEMENT HEATERS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EL-K-2300	1 OF 1	1

EL-E-03
Service: LEAN PHASE WATER COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 10590 kW
Surface Area: 614 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 39.3 barg / x 260.0 C /0 °C
Tube Design Pressure (Max / Min) @ Temperature.: 51.0 barg / x 260.0 C /0 °C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): -/-
Insulation (type/thickness): HC / NONE (CHANNEL: 35 mm) NOTE 5 1



NOTES:

1. SUPPORT FOR SLUG FLOW.
2. COOLING WATER BYPASS PROVIDED TO ALLOW DEFOULING OF EXCHANGER.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EL UNLESS OTHERWISE STATED.
4. ENSURE THAT ONE VALVE OPENS AS THE OTHER CLOSES AND THAT BOTH VALVES CANNOT BE CLOSED AT THE SAME TIME.
5. SIZING OF EL-PR-10 TAKES CREDIT FOR THERMAL INSULATION OF HEAT EXCHANGER EL-E-03. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL.
6. COLD SIDE OUTLET VALVE TO BE TAGGED: "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
7. EL-P0003-V VALVE COEFFICIENT (CV) NOT TO EXCEED 69 1 SAFETY VALVE EL-PR-041/042 RELIEVING RATE AND CAPACITY BASED ON THIS VALVE SIZE. 1
8. POSITION FEEDBACK SIGNAL BY POSITIONER.
9. TWO PHASE FLOW. POSSIBLE UNSTBLE FLOW. 1

HOLDS:

1. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

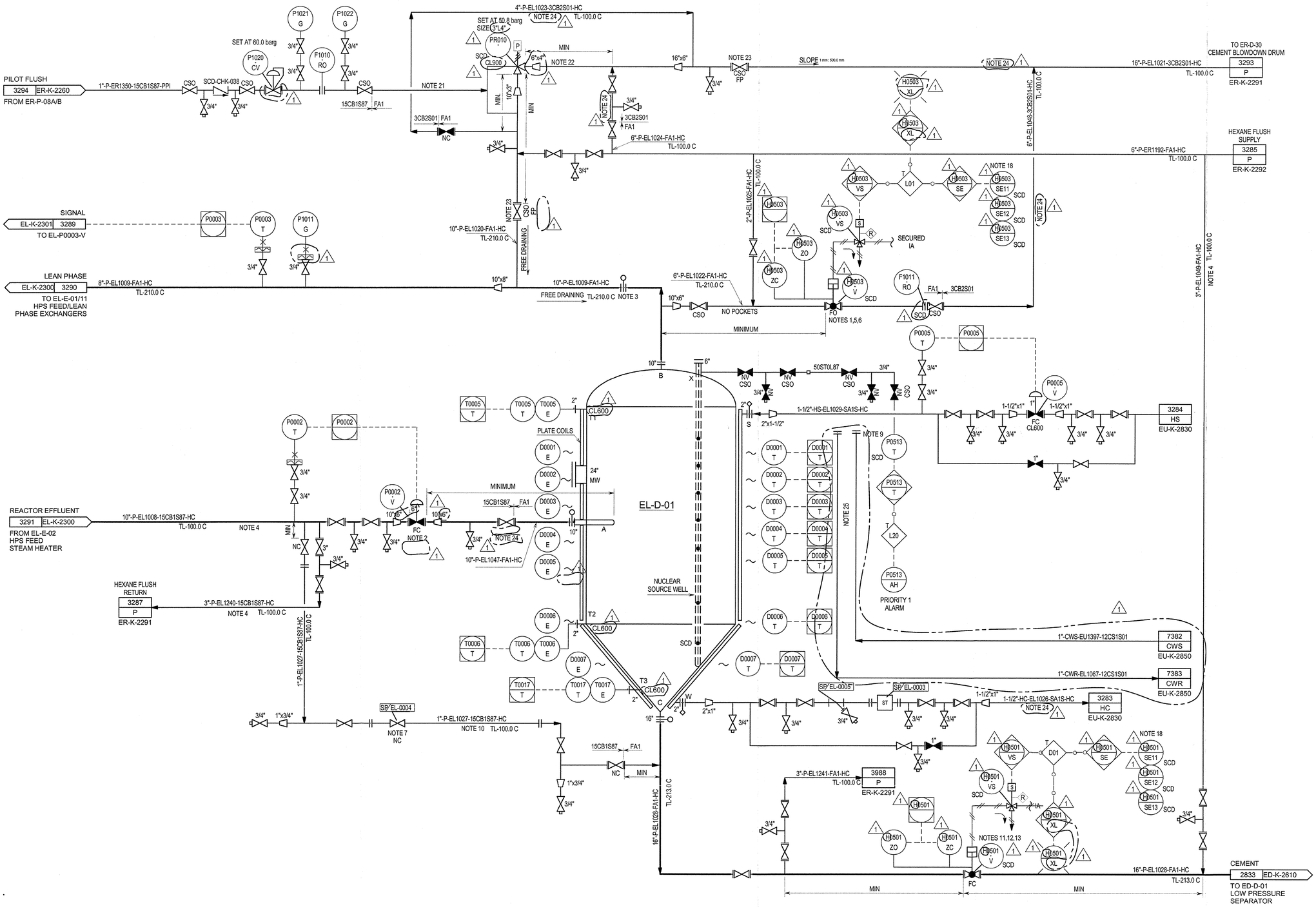
TITLE
PIPING AND INSTRUMENT DIAGRAM
LEAN PHASE RECYCLE
LEAN PHASE COOLER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EL-K-2301	1 OF 1	1

EL-D-01

Service.: HIGH PRESSURE SEPARATOR
Dimension.: 3870.0 mm x 6570.0 mm CONE LENGTH: 4255 mm
Design Pressure (Max / Min) @ Temperature.: 51.0 barg / x 260.0 C / 0 °C
Materials of Construction.: CS
Trim.: -
Insulation (type/thickness).: FP /
PLATE COIL: D.P.: 51 barg /-1.013 barg / D.T.: 425/0°C



NOTES:

1. EMERGENCY DEPRESSURING VALVE.
2. EL-P0002-V VALVE COEFFICIENT (CV) NOT TO EXCEED 62 SAFETY VALVE EL-PR-010 RELIEVING RATE AND CAPACITY BASED ON THIS VALVE SIZE.
3. PROVIDE BREAK OUT SPOOL FOR VESSEL ENTRY VENTILATION.
4. MILD TRACING; NOT TO EXCEED 100°C.
5. V0503-V TO BE SIZED TO REDUCE PRESSURE IN EQUIPMENT FROM OPERATING PRESSURE TO A PRESSURE WHERE BOILING WILL INCUR IN 15 MINUTES FOR FIRE EMERGENCY.
6. THE CEMENT BLOWDOWN PSV SIZING IS AFFECTED BY V0503-V.
7. BLOWDOWN VALVE
8. DELETED.
9. SECONDARY PRESSURE CONTAINMENT REQUIRED. HYDROCARBON DETECTION PROVIDED VIA PRESSURE INDICATION IIN NUCLEAR SOURCE WELL.
10. BYPASS LINE USED TO HEAT HIGH PRESSURE SEPARATOR (FROM BOTTOM TO TOP) UPON PROCESS STARTUP.
11. ROV TO CLOSE ON LOW PRESSURE SEPARATOR HIGH LEVEL.
12. VALVE TO BE MINIMUM DISTANCE FROM EL-D-01 OUTLET NOZZLE.
13. INSTALL LOCKING TABS ON VALVE. SO VALVE CAN BE LOCKED IN CLOSED POSITION AND USED FOR ISOLATION.
14. DELETED.
15. ALL INSTRUMENT TAGS ARE PREFIXED WITH EL UNLESS OTHERWISE STATED.
16. DELETED.
17. DELETED.
18. MOUNTED ON OPERATOR CONSOLE IN CONTROL ROOM.
19. NOT USED.
20. DELETED.
21. PILOT OPERATED VALVE WITH LOCAL SENSING LINE FLUSHED WITH R1 MIXED FEED FROM ER-P-08A/B.
22. TWO PHASE FLOW. REACTION FORCE CALCULATION REQUIRED.
23. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW HORIZONTAL.
24. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
25. COOLING WATER FOR EL-D-01 RADIOACTIVE LEVEL TRANSMITTERS BY MEANS OF TUBING CONNECTIONS.

HOLDS:

1. DELETED.
2. DELETED.
14. DELETED.
41. DELETED.
53. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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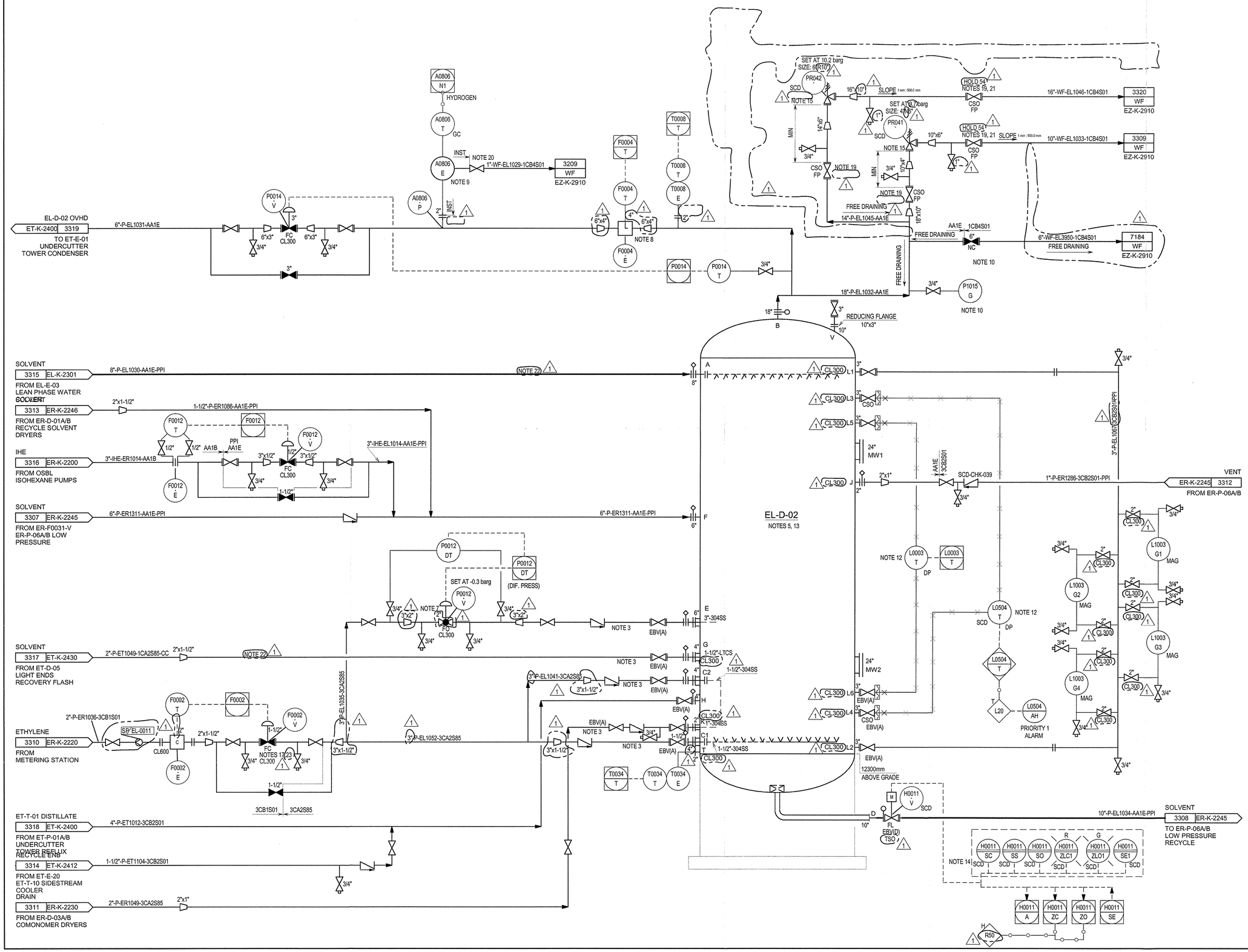
PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
LEAN PHASE RECYCLE
HIGH PRESSURE SEPARATOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EL-K-2310	1 OF 1	1

EL-D-02

Service.: RECYCLE SOLVENT ACCUMULATOR
Dimension.: 3950.0 mm x 12000.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.0 barg / -1.0 barg x 190.0 C / 0 °C
Materials of Construction.: CS FIRE RESISTANT NOTE 13
Trim.: VT-EL1071-AA1E-PPI / VT-EL1074-3CB1S02-PPI (1)
Insulation (type/thickness).: PPI / 25.0 mm



NOTES:

1. DELETED.
2. DELETED.
3. PROTECT NOZZLE FROM COLD TEMPERATURE.
4. SUPPORT FOR SLUG FLOW.
5. A SAFETY CRITICAL LEVEL INSTRUMENT IS PROVIDED TO ENSURE THE LIQUID LEVEL IS MAINTAINED BELOW HLL IN ORDER TO CONTAIN THE LIQUID DUMP FROM HPS IN EVENT OF CV FAIL OPEN.
6. NOT USED.
7. EL-P-0012-V IS USED TO BYPASS SPARGER RINGS IN THE EVENT OF HIGH DIFFERENTIAL PRESSURE ACROSS THE SPARGER.
8. METER TO HAVE A LOW PRESSURE DROP TO ALLOW FOR OPERATION AT LOW PRESSURE.
9. GC ANALYZER FLOW AND PRESSURE TO BE MONITORED TO DCS WHERE APPLICABLE; GC LOCATED INSIDE E-AS-01.
10. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS VALVE.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH EL UNLESS OTHERWISE STATED.
12. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
13. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS " CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
14. EBV LOCAL PANEL LOCATED MINIMUM 12 m AWAY FROM THE SOURCE OF LEAK.
15. PROVIDE WAREHOUSE SPARE.
16. DELETED.
17. EL-F0002-V VALVE COEFFICIENT (CV) NOT EXCEED 6.87 SAFETY VALUE EL-PR-041/ 042 RELIEVING RATE AND CAPACITY BASED ON THIS VALVE SIZE. (1)
18. DELETED.
19. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM OR BELOW THE HORIZONTAL.
20. THREADED END VALVE. (1)
21. DESIGN SUPPORTS FOR LIQUID FULL CONTINGENCY WITH FLUID DENSITY OF 700 m3/h.
22. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. (1)
23. MINIMIZE DISTANCE FROM ELF0002V TO EL-D-02.

HOLDS:

2. DELETED.
53. DELETED.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION. (1)

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1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
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C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
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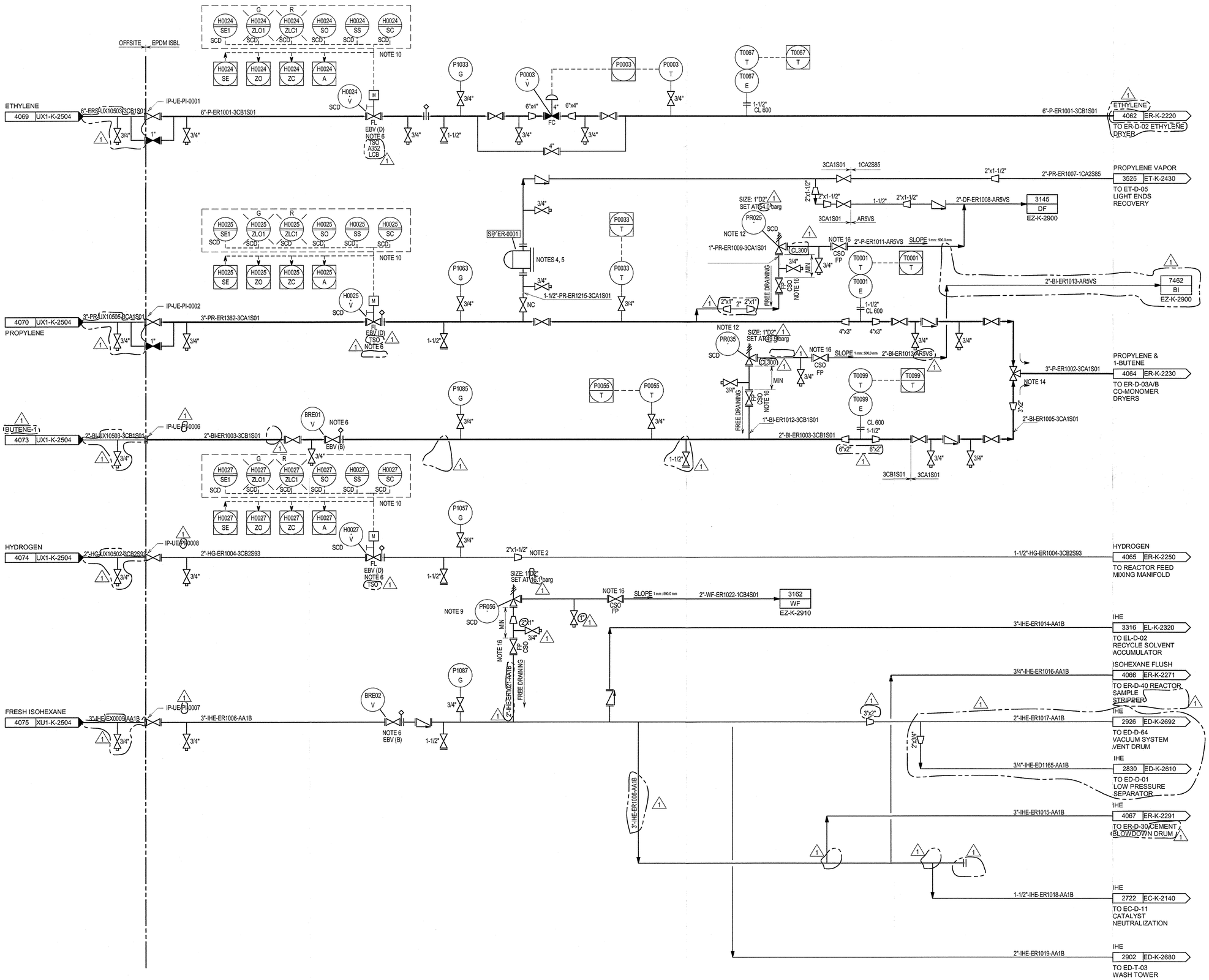
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LEAN PHASE RECYCLE
RECYCLE SOLVENT ACCUMULATOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EL-K-2320	1 OF 1	1



NOTES:

1. DELETED.
2. 2" IS MINIMUM PIPE SIZE ON PIPERACK.
3. DELETED.
4. LINE TO PURGE VAPOR DURING START-UP AND FAMILY GRADE SWITCHES.
5. LIQUID TRAP DEVICE SIMILAR TO THOSE SOLD BY ARMSTRONG INTERNATIONAL.
6. VALVES TO BE LOCATED AT BATTERY LIMIT STATION.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
8. DELETED.
9. THE MAINTENANCE OF THE ER-PR-056 TO BE PERFORMED WHEN PRESSURE SOURCES ARE ISOLATED BY OPERATING PROCEDURE.
10. EBV LOCAL PANEL LOCATED MINIMUM 12m AWAY FROM THE VALVE AT GRADE.
11. DELETED.
12. THERMAL RELIEF VALVE.
13. DELETED.
14. "L" PORT THREE WAY VALVE WITH COMMON OUTLET ON LINE ER 1002.
15. "L" PORT VALVE SHOULD BE ACCESIBLE AND LOCATED NEAR ER-D-03 A/B DRYERS.
16. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

38. DELETED.
54. DELETED.

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C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
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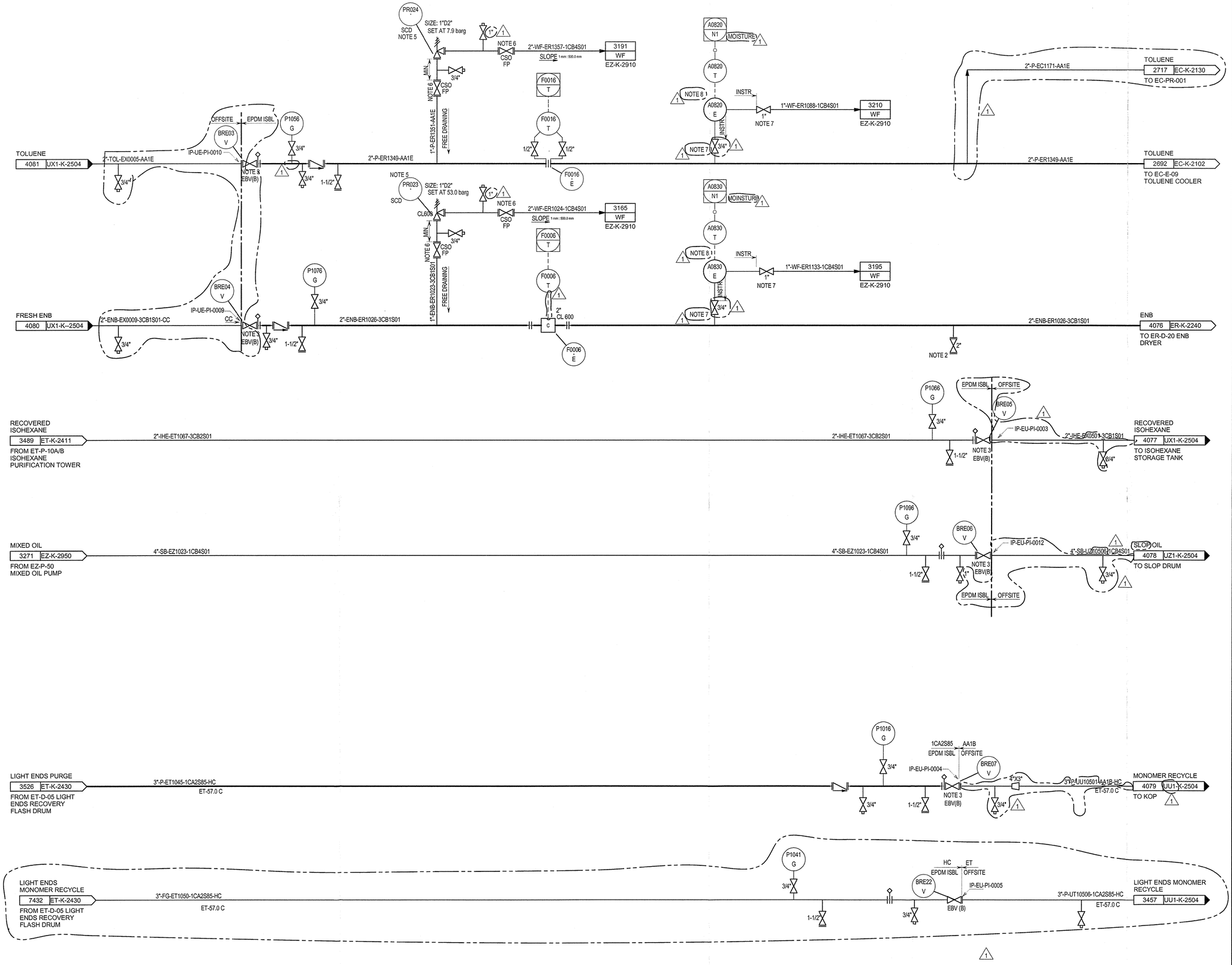
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
FEED AND PRODUCT LINES

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2200	1 OF 1	1



NOTES:

1. DELETED.
2. FOR FUTURE RECYCLE ENB FACILITIES.
3. VALVE TO BE LOCATED AT BATTERY LIMIT STATION.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
5. THERMAL RELIEF VALVE.
6. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
7. THREADED END VALVE.
8. ANALYZER LOCATED IN RACK EZ-AX-05. SEE DETAIL IN P&ID EZ-K-2955A.

HOLDS:

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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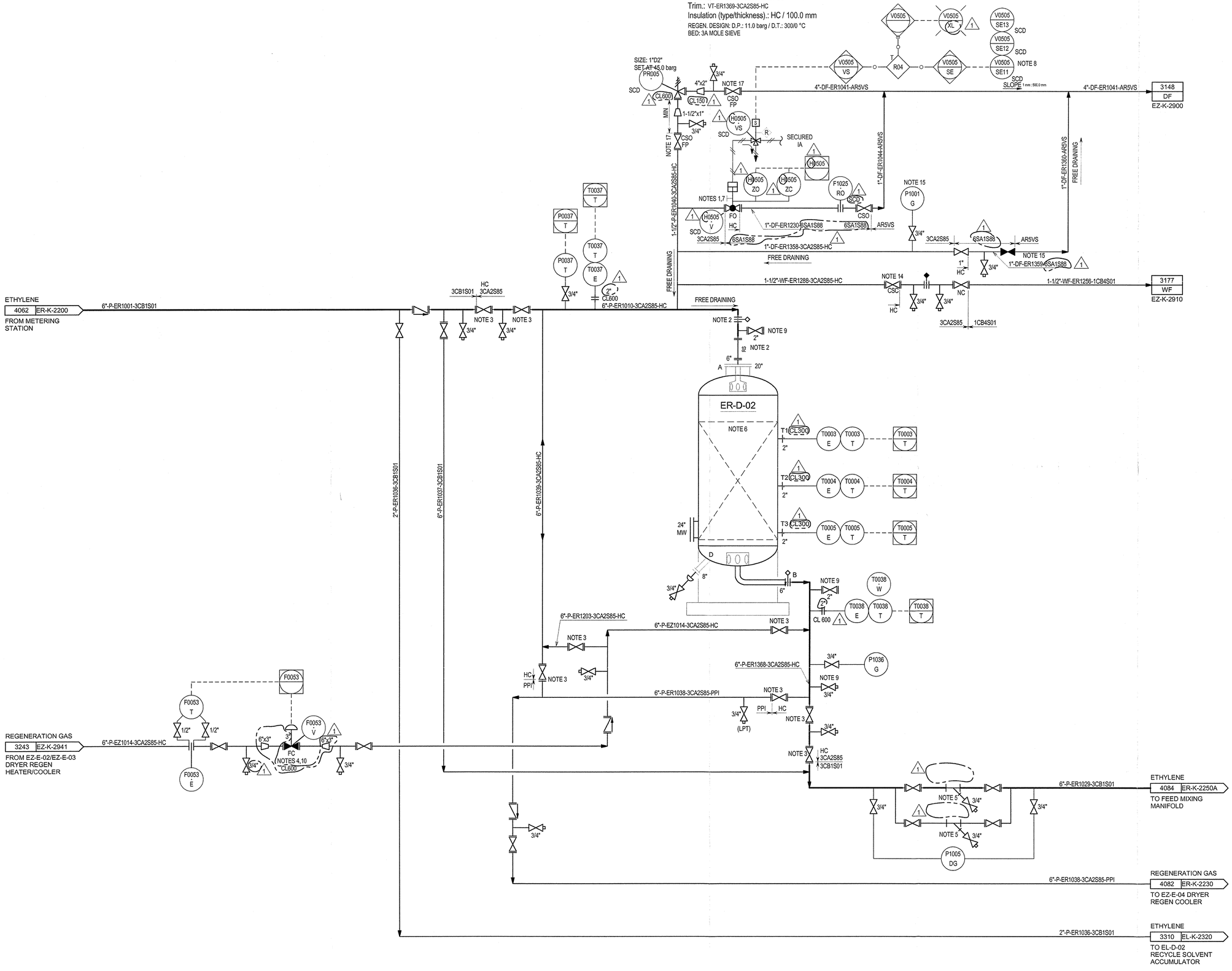
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
FEED AND PRODUCT LINES

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ER-K-2201	1 OF 1	1



NOTES:

1. EMERGENCY DEPRESSURING VALVE.
2. BREAK OUT SPOOL FOR DESSICANT LOADING.
3. ALL VALVES ASSOCIATED WITH THE DRYER REGENERATION SYSTEM SHALL BE LOCATED AT GRADE IN AN ERGONOMIC ARRANGEMENT.
4. NO CONTROL VALVE BYPASS PROVIDED TO LIMIT POTENTIAL BACK FLOW OF HIGH PRESSURE FROM DRYER BEDS INTO REGENERATION SYSTEM.
5. Y STRAINERS TO HAVE 100 MESH SCREEN.
6. FOR REGENERATION, HEATING IS COUNTERCURRENT TO PROCESS; COOLING IS COCURRENT TO PROCESS.
7. H0505-V TO BE SIZED TO REDUCE PRESSURE TO 50% OF ITS DESIGN PRESSURE IN 15 MINUTES FOR FIRE EMERGENCY.
8. ACTUATOR BUTTON TO BE MOUNTED ON OPERATOR CONSOLE IN CONTROL ROOM.
9. STEAM CONNECTION FOR DESSICANT DEACTIVATION.
10. CV SHOULD NOT EXCEED 111.3 TO PREVENT BED LIFT UP.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
12. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
13. DELETED.
14. THIS VALVE TO BE OPENED ONLY AFTER DEINVENTORY THE ETHYLENE FROM THE DRYER FOR COLD PROTECTION OF CARBON STEEL WET FLARE LINE. LINE USED ONLY FOR STEAM OUT PURPOSES.
15. PG TO BE READABLE FROM BY-PASS VALVE.
16. DELETED.
17. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

1. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

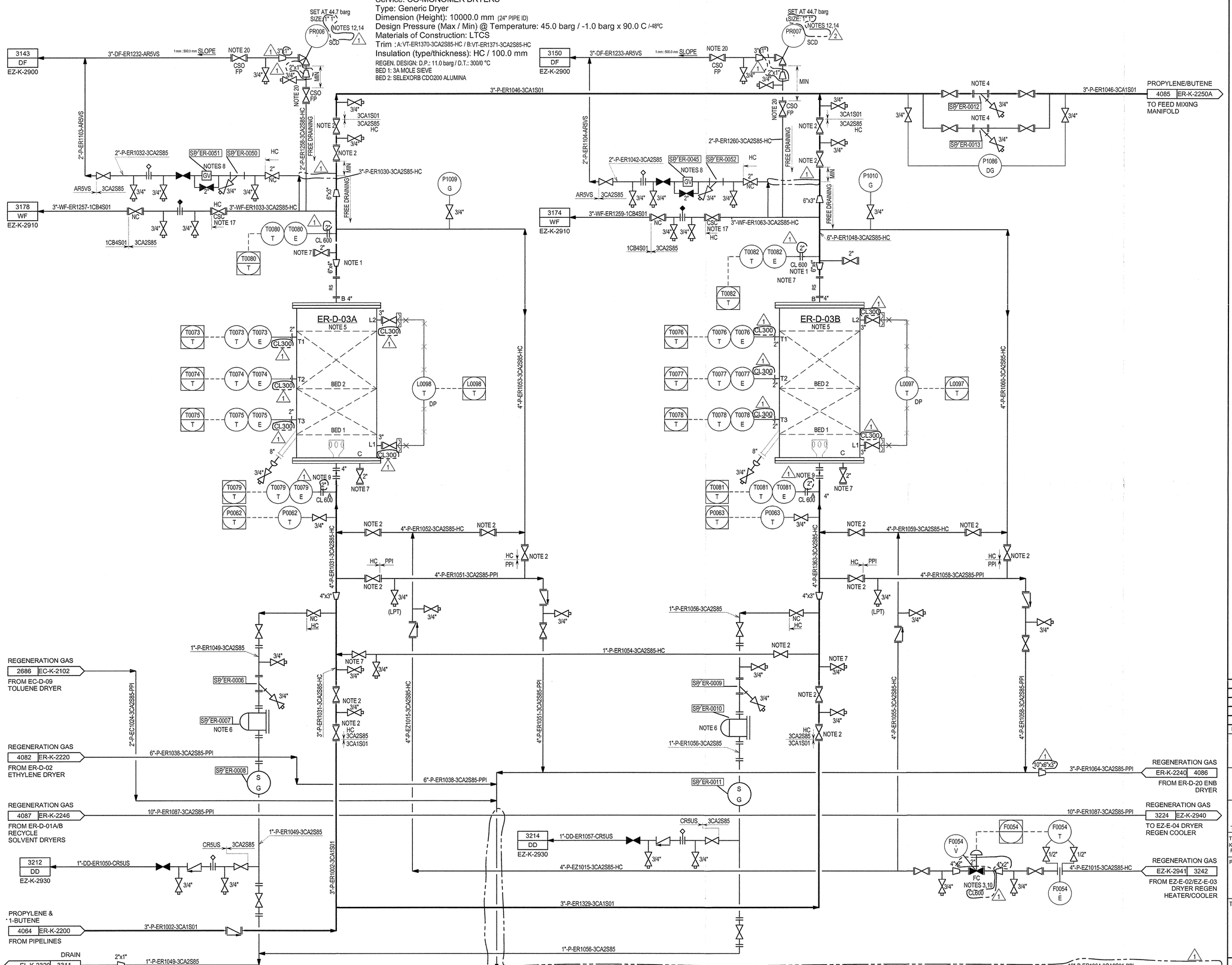
TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
ETHYLENE DRYER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2220	1 OF 1	1

ER-D-03A/ B

Service: CO-MONOMER DRYERS
Type: Generic Dryer
Dimension (Height): 10000.0 mm (24" PIPE ID)
Design Pressure (Max / Min) @ Temperature: 45.0 barg / -1.0 barg x 90.0 C /-48ºC
Materials of Construction: LTCS
Trim : A: VT-ER1370-3CA2S85-HC / B:VT-ER1371-3CA2S85-HC
Insulation (type/thickness): HC / 100.0 mm
REGEN. DESIGN: D.P.: 11.0 barg / D.T.: 300/0 °C
BED 1: 3A MOLE SIEVE
BED 2: SELEXORB CDO200 ALUMINA



NOTES:

1. BREAK OUT SPOOL FOR DESSICANT LOADING.
2. ALL VALVES ASSOCIATED WITH THE DRYER REGENERATION SYSTEM SHALL BE LOCATED AT GRADE IN AN ERGONOMIC ARRANGEMENT.
3. NO CONTROL VALVE BYPASS PROVIDED TO LIMIT POTENTIAL BACK FLOW OF HIGH PRESSURE FROM DRYER BEDS INTO REGENERATION SYSTEM.
4. STRAINERS TO HAVE 100 MESH SCREEN.
5. FOR REGENERATION, HEATING IS COUNTERCURRENT TO PROCESS; COOLING COCURRENT TO PROCESS.
6. ENGINEERED ITEM. LIQUID TRAP DEVICE.
7. STEAM CONNECTION FOR DESSICANT DEACTIVATION.
8. ENGINEERED ITEM. GAS VENT.
9. REMOVABLE SPOOL PIECE TO ENABLE REMOVAL OF THE BOTTOM FLANGE ALONG WITH THE DISTRIBUTOR.
10. CV SHOULD NOT EXCEED 39.2 TO PREVENT BED LIFT UP.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
12. RUPTURE PIN VALVE.
13. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
14. SET PRESSURE TO BE ADJUSTED DOWNWARD FOR EFFECT OF STATIC HEAD BETWEEN TOP OF VESSEL AND PSV LOCATION.
15. MINIMIZE LIQUID HOLD UP IN THE REGENERATION LINES.
16. DELETED.
17. USED FOR STEAM OUT ONLY. THIS VALVE TO BE OPENED ONLY AFTER DEINVENTORY THE PROPYLENE/BUTENE FROM THE DRYER FOR COLD PROTECTION OF CARBON STEEL WET FLARE LINE.
18. DELETED.
19. DELETED.
20. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

1 DELETED.
2 DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/09/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

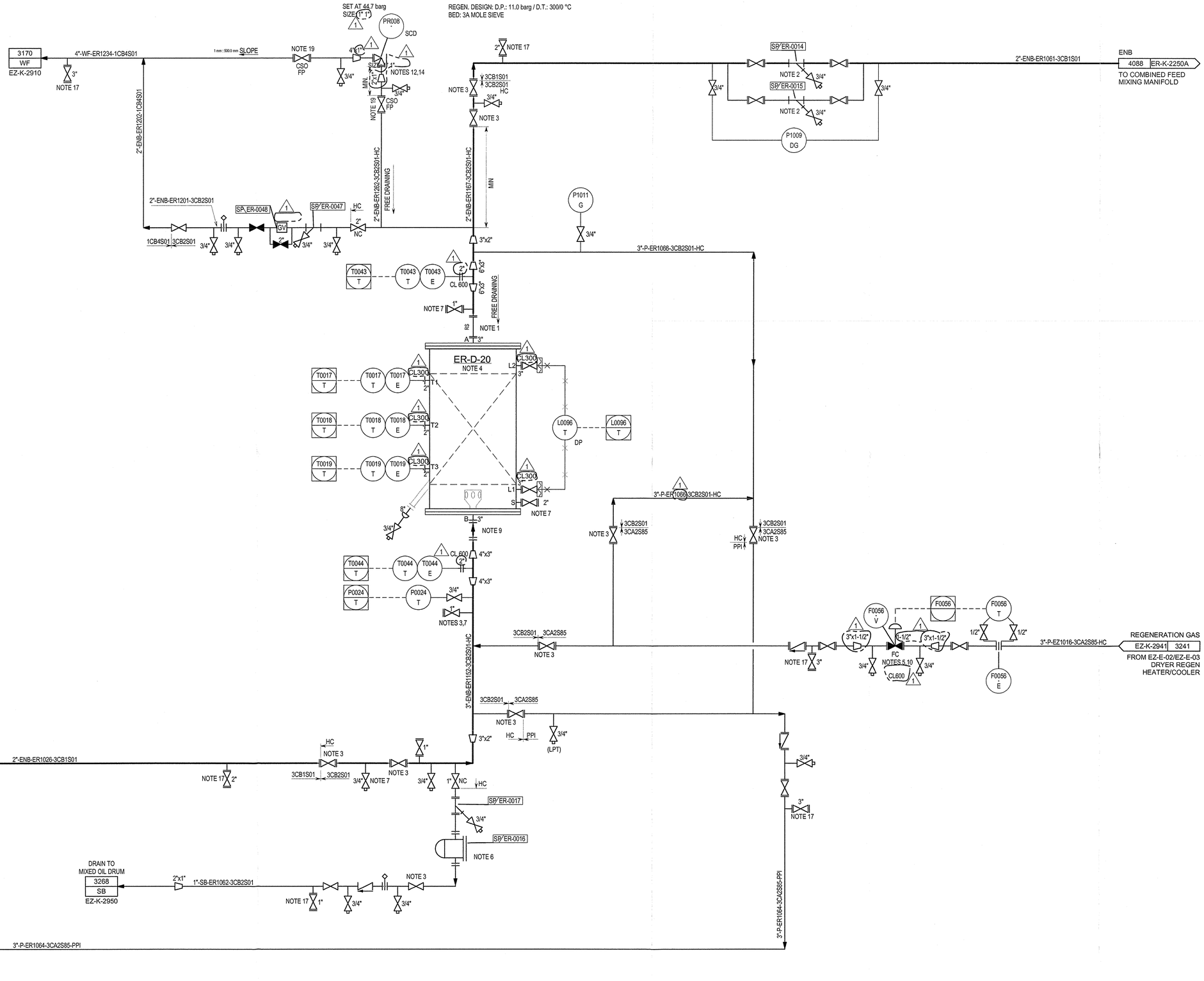
TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
CO-MONOMER DRYERS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2230	1 OF 1	1

ER-D-20

Service: ENB DRYER
Type: Generic Dryer
Dimension (Height): 11000.0 mm (24" PIPE ID)
Design Pressure (Max / Min) @ Temperature: 45.0 barg / -1.0 barg x 90.0 C /0°C
Materials of Construction: CS NOTE 13
Trim : VT-ER1372-3CB2S01-HC
Insulation (type/thickness): HC / 100.0 mm

REGEN. DESIGN: D.P.: 11.0 barg / D.T.: 300/0 °C
BED: 3A MOLE SIEVE



NOTES:

1. BREAK OUT SPOOL FOR DESSICANT LOADING.
2. Y STRAINERS TO HAVE 100 MESH SCREEN.
3. ALL VALVES ASSOCIATED WITH THE DRYER REGENERATION SYSTEM SHALL BE LOCATED AT GRADE IN AN ERGONOMIC ARRANGEMENT.
4. FOR REGENERATION, HEATING IS COUNTERCURRENT TO PROCESS; COOLING COCURRENT TO PROCESS.
5. NO CONTROL VALVE BYPASS PROVIDED TO LIMIT POTENTIAL BACKFLOW OF HIGH PRESSURE FROM DRYER BED INTO REGENERATION SYSTEM. THE POSSIBILITY OF LIFTING THE BEDS DUE TO EXCESSIVE FLOW REGEN GAS IS ALSO MINIMIZED.
6. ENGINEERED ITEM. LIQUID TRAP DEVICE.
7. STEAM CONNECTION FOR DESSICANT DEACTIVATION.
8. ENGINEERED ITEM: GAS VENT.
9. REMOVABLE SPOOL PIECE TO ENABLE REMOVAL OF THE BOTTOM FLANGE ALONG WITH THE DISTRIBUTOR.
10. CV SHOULD NOT EXCEED 28.2 TO PREVENT BED LIFT UP.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
12. RUPTURE PIN VALVE.
13. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
14. SET PRESSURE TO BE ADJUSTED DOWNWARD FOR EFFECT OF STATIC HEAD BETWEEN TOP OF VESSEL AND PSV LOCATION.
15. MINIMIZE LIQUID HOLD UP IN THE REGENERATION LINES.
16. DELETED.
17. FUTURE ENB DRYER CONNECTION.
18. DELETED.
19. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

1. DELETED
2. DELETED

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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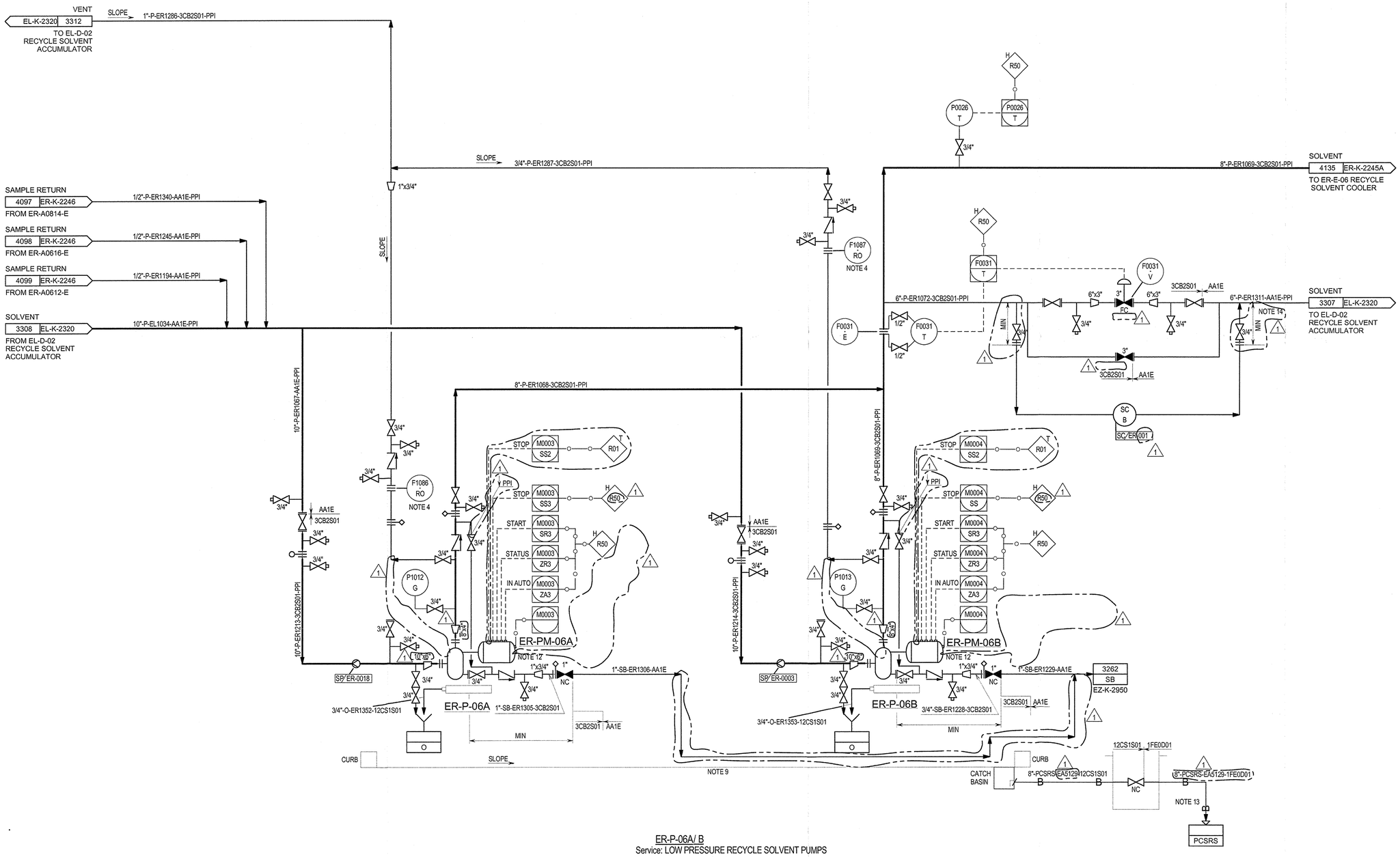
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
ENB DRYER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2240	1 OF 1	1



ER-P-06A/ B
Service: LOW PRESSURE RECYCLE SOLVENT PUMPS
Type: Horizontal centrifugal pump
Capacity: 225.0 m^3/hr
Differential Press.: 26.1 bar
Material of Construction: CS

NOTES:

1. DELETED.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
3. DELETED.
4. CONTINUOUS VENTING FACILITY TO BE PROVIDED BY IMPLEMENTING A VENT LINE FROM THE HIGH POINTS OF DISCHARGE PIPING BACK TO THE VAPOR PHASE OF EL-D-02. THIS VENT LINE SHOULD BE EQUIPPED WITH A RESTRICTION ORIFICE AND A CHECK VALVE. THE ORIFICE SHOULD BE SIZED TO MINIMIZE THE RECYCLE FLOW RATE WHEN THE PUMP IS RUNNING BUT SHOULD NOT BE LESS THAN 1/4" DIAMETER.
5. NOT USED.
6. NOT USED.
7. NOT USED.
8. NOT USED.
9. TO BE MONITORED BY MACHINE PROTECTION AND MONITORING SYSTEM.
10. DELETED.
11. DELETED.
12. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
13. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWINGS.
14. TWO PHASE FLOW, POSSIBLE UNSTABLE FLOW.

HOLDS:

1. DELETED.
4. DELETED.
52. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	STR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	STR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
RECYCLE SOLVENT PUMPS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2245	1 OF 1	1

ER-E-07

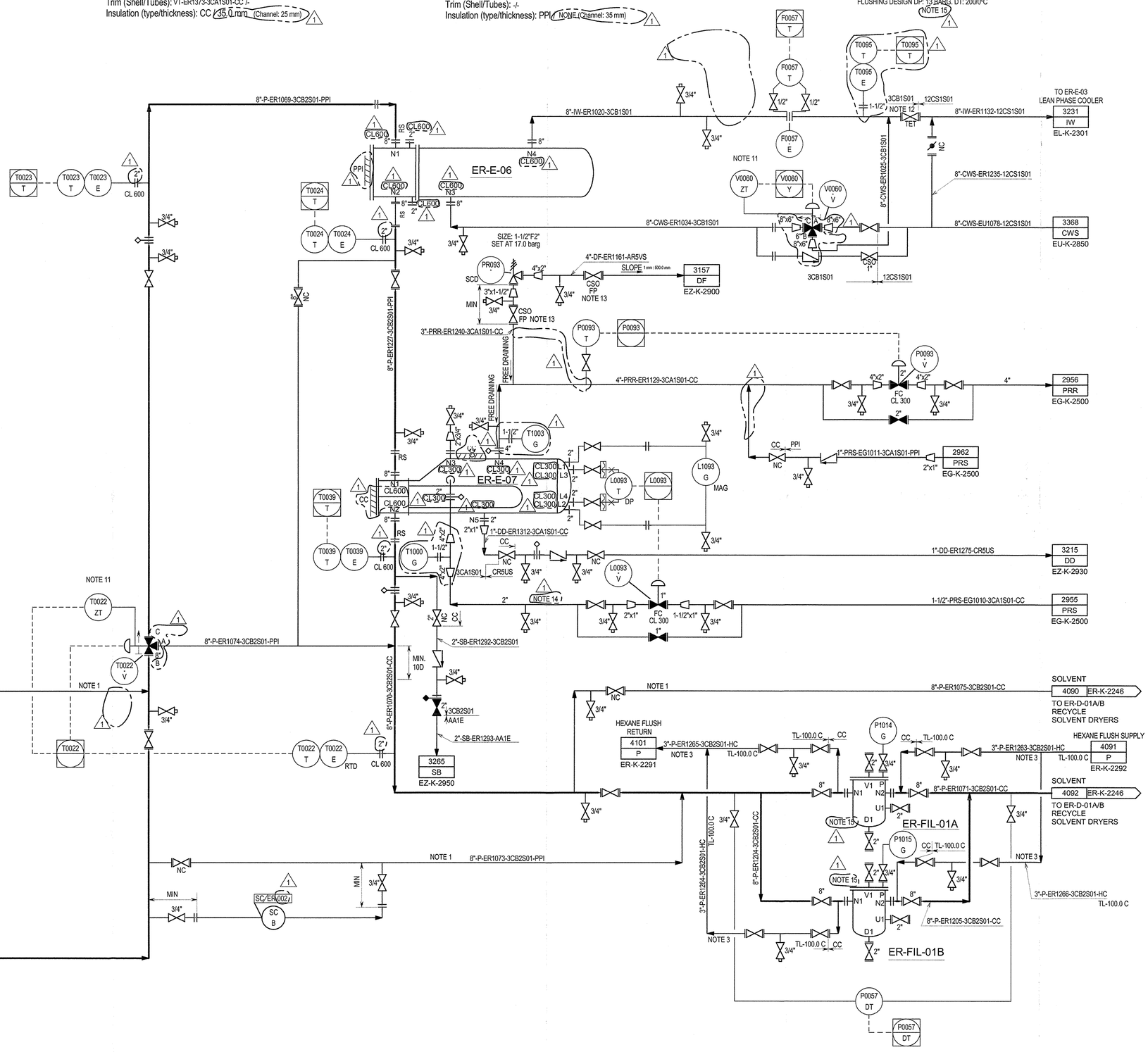
Service: RECYCLE SOLVENT CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger
Heat Duty: 232 kW
Surface Area: 36 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 34.7 barg / -1.0 barg x 115.0 C / -48 ºC
Tube Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 120.0 C / 0 ºC
Materials of Construction (Shell/Tubes): LTCS / CS
Trim (Shell/Tubes): VT-ER1373-3CA1S01-CC /-
Insulation (type/thickness): CC (35.0 mm (Channel: 25 mm) 1)

ER-E-06

Service: RECYCLE SOLVENT COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 739 kW
Surface Area: 362 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 34.7 barg / x 120.0 C / 0 ºC
Tube Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 120.0 C / 0 ºC
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): -/-
Insulation (type/thickness): PPI (NONE (Channel: 35 mm) 1)

ER-FIL-01A/ B

Service: SOLVENT DRYER INLET FILTERS
Type: Filter
Capacity: 219.8 m^3/hr
Design Pressure (Max / Min) @ Temperature: 45.0 barg / -1.0 barg x 120.0 C / 0 ºC
Differential Pressure: 0.7 bar
Material of Construction: CS
TRIM: A: VT-ER1374-3CB2S01-CC /B: VT-ER1375-3CB2S01-CC
FLUSHING DESIGN DP: 13 BARG, DT: 200/0ºC



NOTES:

1. BYPASS LINES TO ALLOW OPERATING COOLER UPSTREAM OR DOWNSTREAM OF DRIERS DEPENDING ON FOULING CHARACTERISTICS OF GRADE.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
3. MILD TRACING: NOT EXCEED 100°C.
4. DELETED.
5. NOT USED.
6. NOT USED.
7. NOT USED.
8. NOT USED.
9. DELETED.
10. DELETED.
11. POSITION FEEDBACK SIGNAL BY POSITIONER.
12. COLD SIDE OUTLET VALVE TO BE TAGGED: "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
13. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
14. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
15. CAUTION: EQUIPMENT MUST BE COMPLETELY DRAINED AFTER OPERATION (DRY VESSEL).

HOLDS: 1

1 DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAS
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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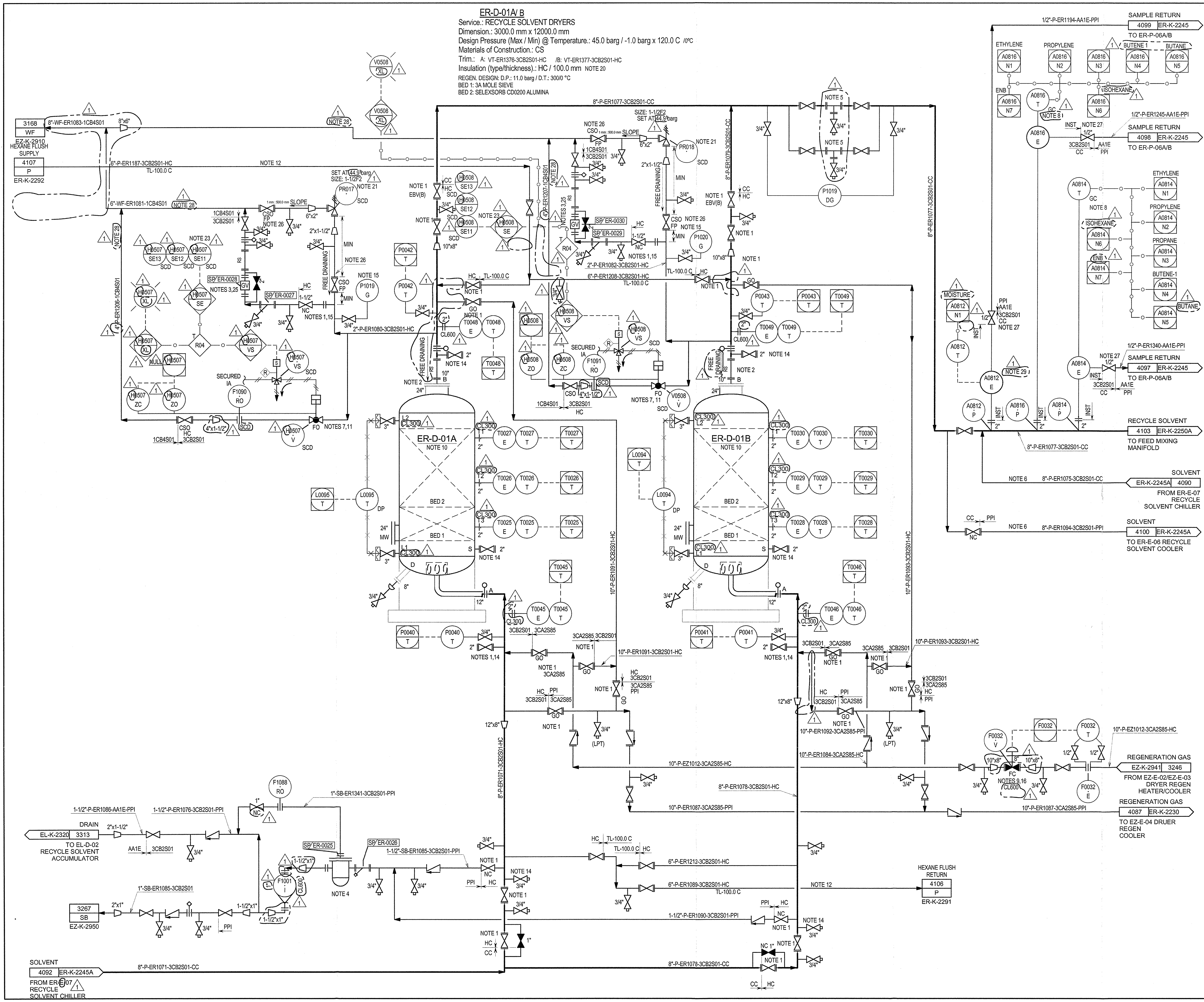
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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
RECYCLE SOLVENT COOLER 1

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2245A	1 OF 1	1



NOTES:

1. ALL VALVES ASSOCIATED WITH THE DRYER REGEN SYSTEM SHALL BE LOCATED AT GRADE IN AN ERGONOMIC ARRANGEMENT.
2. BREAK OUT SPOOL FOR DESSICANT LOADING.
3. ENGINEERED ITEM: GAS VENT.
4. ENGINEERED ITEM: LIQUID TRAP DEVICE.
5. "T" TYPE STRAINERS TO BE 100 MESH.
6. BYPASS LINES TO ALLOW OPERATING RECYCLE COOLER ER-E-06 UPSTREAM OR DOWNSTREAM OF DRYERS DEPENDING ON FOULING CHARACTERISTIC OF GRADE.
7. EMERGENCY DEPRESSURING VALVE.
8. GC ANALYZER SAMPLE PUMP. FLOW & PRESSURE STATUS TO BE PROVIDED TO DCS WHERE APPLICABLE; GC LOCATED INSIDE E-AS-01 SHELTER.
9. MINIMIZE PRESSURE DROP ACROSS ER-F0032-V TO MAXIMIZE REGEN GAS FLOW TO DRYERS.
10. FOR REGENERATION, HEATING IS COUNTERCURRENT TO PROCESS; COOLING COCURRENT TO PROCESS.
11. V0507-V, V0508-V TO BE SIZED TO REDUCE PRESSURE IN EQUIPMENT FROM OPERATING PRESSURE TO 50% OF ITS DESIGN PRESSURE IN 15 MINUTES FOR FIRE EMERGENCY.
12. MILD TRACING; NOT TO EXCEED 100°C.
13. DELETED.
14. STEAM CONNECTION FOR DESSICANT DEACTIVATION.
15. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS VALVE.
16. CV SHOULD NOT EXCEED 513 TO PREVENT BED LIFT UP.
17. DELETED.
18. DELETED.
19. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
20. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
21. SET PRESSURE TO BE ADJUSTED DOWNWARD FOR EFFECT OF STATIC HEAD BETWEEN TOP OF VESSEL AND PSV LOCATION.
22. MINIMIZE LIQUID HOLD UP IN THE REGENERATION LINES.
23. MOUNTED ON OPERATOR CONSOLE IN CONTROL ROOM.
24. DELETED.
25. GAS TRAP TO BE LOCATED AT GRADE.
26. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
27. THREADED END VALVE.
28. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
29. ANALYZER LOCATED IN RACK EZ-AX-04 SEE DETAIL IN P&ID EZ-K-2955A.

HOLDS:

1. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
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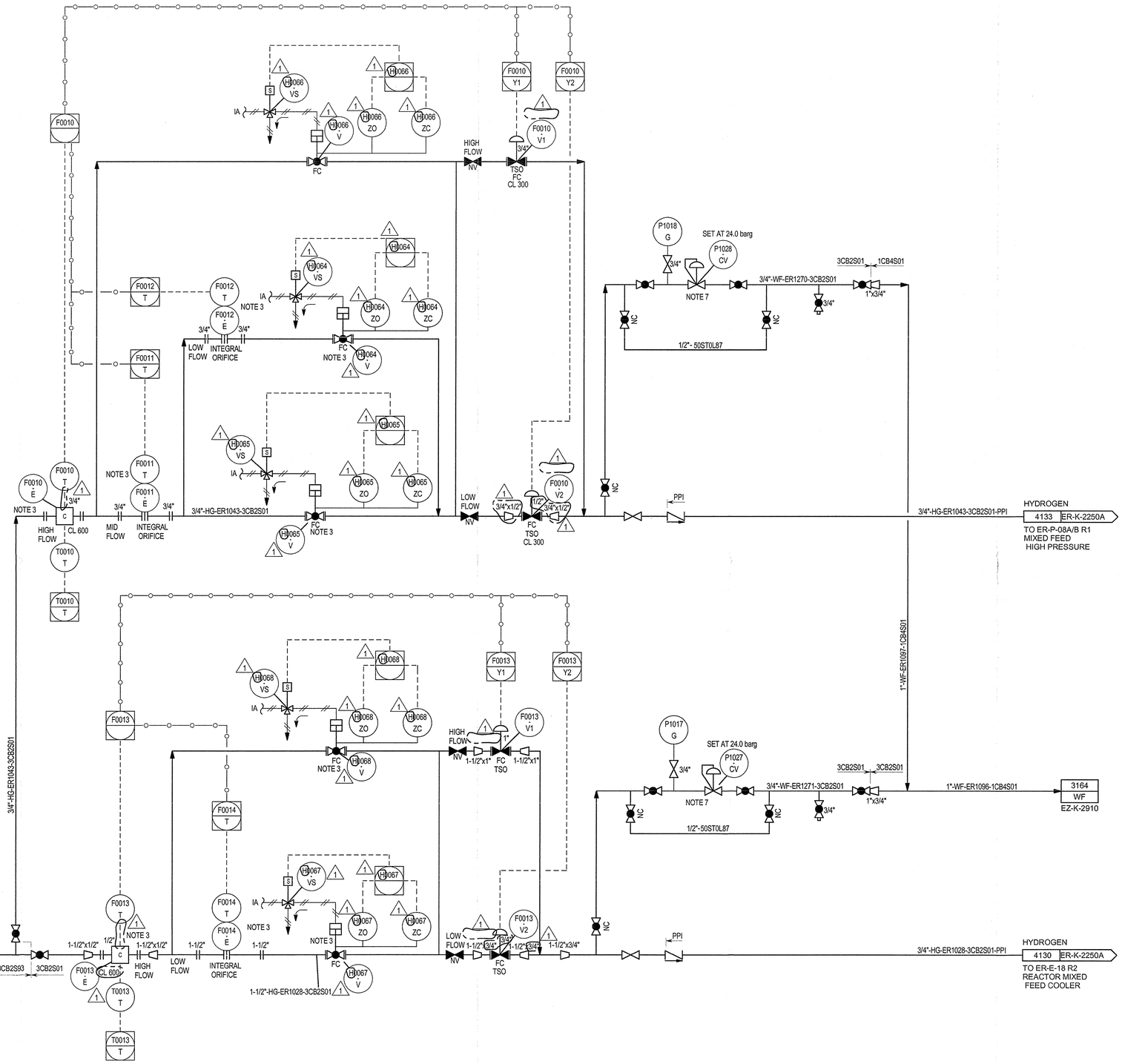
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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
RECYCLE SOLVENT DRYERS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2246	1 OF 1	1



NOTE:

1. DELETED.
2. DELETED.
3. HYDROGEN METER TO BE SKID MOUNTED AND FLOW TESTED. DESIGNED TO HAVE NO LEAKAGE DOWNSTREAM OF FLOW METERS (DUE TO LOW FLOW RATES).
4. DELETED.
5. DELETED.
6. DELETED.
7. REGULATOR VALVES TO FLARE ONLY INTENDED FOR USE DURING H2 FLOW METER CALIBRATION. ALL ASSOCIATED VALVES TO BE NORMALLY CLOSED.
8. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
9. DELETED.
10. DELETED.
11. DELETED.

HOLDS:

39. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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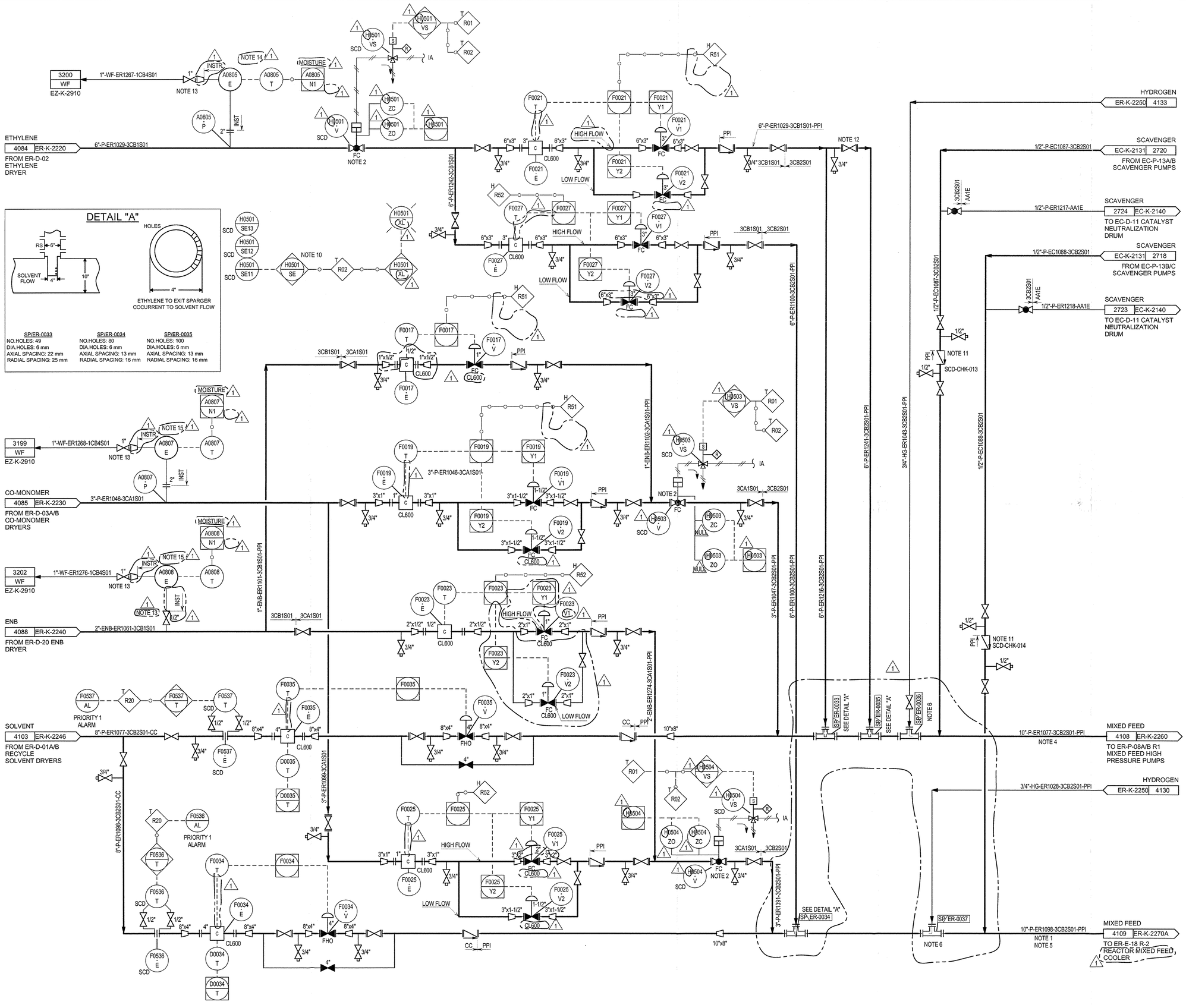
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
HYDROGEN FEED 1/1

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ER-K-2250	1 OF 1	1



NOTES:

1. SUPPORT FOR SLUG FLOW.
2. ROV TO CLOSE ON HIGH REACTOR TEMPERATURE OR HP FEED PUMP VIBRATION.
3. DELETED.
4. DISTANCE FROM ER/SP-0033 TO ER/SP-0035 AND ER/SP-0036 TO BE AT LEAST 1 METER. DISTANCE FROM ER/SP-0035 TO SUCTION OF ER-P-08A/B TO BE AT LEAST 4 METERS.
5. DISTANCE FROM ER/SP-0034 AND ER/SP-0037 TO SUCTION OF ER-P-18A/B TO BE AT LEAST 7 METERS.
6. HYDROGEN INJECTION TO BE TOP ENTRY TO CENTER OF PIPE.
7. DELETED.
8. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
9. DELETED.
10. HAND SWITCH MOUNTED IN OPERATOR CONSOLE IN CONTROL ROOM USED TO SHUTDOWN ETHYLENE AND MIXED MONOMER ROV'S.
11. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN EC-PR-001 RELIEF VALVE SIZING.
12. THE SECOND ETHYLENE SPARGER TO BE OPENED FOR HIGH ETHYLENE FLOW GRADES.
13. THREADED VALVE.
14. ANALYZER LOCATED IN RACK EZ-AX-02 SEE DETAIL IN P&ID EZ-K-2955A.
15. ANALYZER LOCATED IN RACK EZ-AX-03 SEE DETAIL IN P&ID EZ-K-2955A.

HOLDS:

1. DELETED.
2. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT: Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE: PIPING AND INSTRUMENT DIAGRAM
FEED & REACTORS
R1/R2 MIXING MANIFOLD

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2250A	1 OF 1	1

PILOT FLUSH
EL-K-2310 3294
TO EL-PR-010
1"-P-ER1350-15CB1S87-PPI
CSO

8"-P-ER1106-15CB1S87-PPI
R1 COMBINED FEED
4156 ER-K-2260A
TO ER-E-O8
R1 REACTOR MIXED
FEED COOLER

F0033 E
F0033 T
F0033
H R51
3/4" 3/4" 3/4" 3/4"

6"-P-ER1278-3CB2S01-PPI
4"-P-ER1343-15CB1S87-PPI
PPI 3CB2S01
CC 15CB1S87
F0033 V
3" FO
6"x3"
3/4"
3"

6"-P-ER1111-15CB1S87-CC
R1 COMBINED FEED
ER-K-2260A 4159
FROM ER-E-O9
R1 REACTOR MIXED
FEED CHILLER

P0032 T
P0032 T
H R51
3/4" 3/4"

P0029 T
P0029
3/4"

SIGNAL
4160 ER-K-2260A
TO P0029V

R1 COMBINED FEED
4108 ER-K-2250A
FROM MIXING
MANIFOLD
10"-P-ER1077-3CB2S01-PPI
3CB2S01 15CB1S87
NOTE 14
3/4"

8"-P-ER1107-15CB1S87-PPI

R1 COMBINED FEED
4158 ER-K-2260A
FROM PR 016
4"-P-ER1113-3CB2S01-PPI
FREE DRAINING
4"-P-ER1342-3CB2S01-PPI

10"-P-ER1105-3CB2S01-PPI

R2 COMBINED FEED
4112 ER-K-2270
FROM ER-P-18
SUCTION
10"-P-ER1299-3CB2S01-CC

PPI CJ
CC PPI
NC
8"-P-ER1106-15CB1S87-CJ
10"-CWS-ER1395J-12CS1S01-CC

PPI CJ
CC
8"-P-ER1300-15CB1S87-CC
R2 COMBNED FEED
4110 ER-K-2270
TO ER-P-18
DISCHARGE
3/4"

8"-P-ER1107-15CB1S87-CJ
10"-CWS-ER1397J-12CS1S01-CC
CJ
HIGH POINT
1"x3/4" FREE DRAINING
1"-DF-ER1327-15CB1S87
15CB1S87 15A1S87 AR5VS
1"-DF-ER1328-AR5VS
NC
FREE DRAINING
3153 DF EZ-K-2900

3 15CB1S87 15A1S87 AR5VS
1"-DF-ER1361-15CB1S87
HIGH POINT
1"x3/4" FREE DRAINING
1" NC
1"-DF-ER1310-AR5VS
3151 DF EZ-K-2900

PPI 3CB2S01 15CB1S87 CJ
MIN.
SCD-CHK-016
NOTE 9
SCD-CHK-015
P1021 G
HIGH POINT
3/4"-DF-ER1407-15CB1S87

PPI 3CB2S01 15CB1S87 CJ
MIN
NOTE 9
SCD-CHK-018
SCD-CHK-017
P1022 G
HIGH POINT
3/4"-DF-ER1408-15CB1S87

ER-P-18
3250 SB ER-K-2270
1"-SB-ER1318-AA1E

3253 SB EZ-K-2950
2"-SB-ER1314-AA1E

10"-P-ER1279-15CB1S87-CJ
12"-CWS-ER1394J-12CS1S01-CC
3

H R51 3 T0083 T
T0083 T
T0083 E
RTD
2"

ER-P-08A
SP'ER-0042
3/4" 3/4"
8"x6" RTJ
CL1500
10"x8" RTJ
CL1500
NOTE 3
ER-PM-08A
NOTE 6
NOTE 13
2"x1"
1" NC
1"x3/4"
3/4"-SB-ER1315-15CB1S87
2"x3/4"
2" ND1
3/4"-O-ER1388-12CS1S01
MIN
AA1E 15CB1S87

1"-SB-ER1316-AA1E

10"-P-ER1281-15CB1S87-CJ
12"-CWS-ER1396J-12CS1S01-CC
H R51 3
H R52 3
T0084 T
T0084 T
T0084 E
RTD
2"

ER-P-08B
SP'ER-0043
3/4" 3/4"
8"x6" RTJ
10"x8"
NOTE 3
ER-PM-08B
NOTE 6
NOTE 13
1" NC
1"x3/4"
3/4"-SB-ER1317-15CB1S87
2"x3/4"
2" ND1
3/4"-O-ER1389-12CS1S01
MIN
AA1E 15CB1S87

H0514 SE11
H0514 SE12
H0514 SE13
H0514 SE
T R01
NOTE 15
3

ER-P-08A / B
Service: R1 MIXED FEED HIGH PRESSURE PUMPS
Type: Horizontal centrifugal pump
Capacity: 274.0 m^3/hr
Differential Press.: 105.7 bar
Material of Construction: CS
Insulation: CJ

NOTES:

1. DELETED.
2. DELETED.
3. REQUIRES AUTOMATIC MACHINERY, MONITORING AND CONTROLS/TRIP SYSTEM FOR EQUIPMENT PROTECTION.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
5. DELETED.
6. COOLING WATER TRACE AND INSULATION TO BE PROVIDED FOR THE PUMP CASINGS AS WELL AS THE INDIVIDUAL SUCTION AND DISCHARGE PIPING WITH COOLING WATER. INSULATION CODE FOR COOLING WATER TRACE APPLY CJ.
7. DELETED.
8. NOT USED.
9. DIFFERENT TYPE CHECK VALVES TO BE INSTALLED.
10. DELETED.
11. DELETED.
12. DELETED.
13. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
14. START-UP LINE FOR SYSTEM FILL-UP.
15. EMERGENCY LOCAL PUSH BUTTON TRIPS R1 MIXED FEED HIGH PRESSURE PUMPS (ER-P-08A/B) AND R2 MIXED FEED HIGH PRESSURE PUMP (ER-P-18). 3

HOLDS:

3

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
3	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
2	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
1	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 MIXED FEED PUMPS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

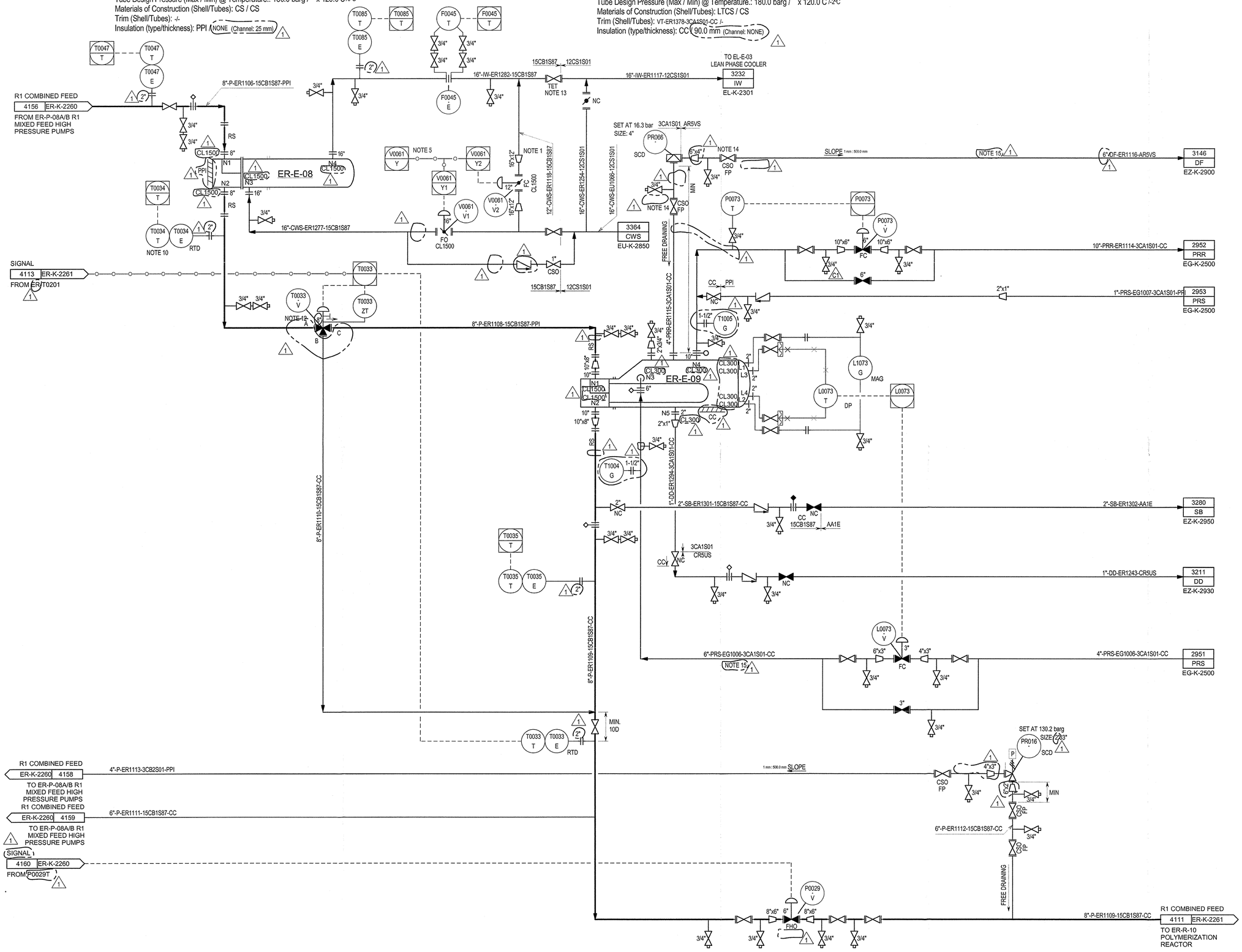
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2260	1 OF 1	3

ER-E-08

Service: R1 REACTOR MIXED FEED COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 1516 kW
Surface Area: 635 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 139.0 barg / x 120.0 C /0ºC
Tube Design Pressure (Max / Min) @ Temperature.: 180.0 barg / x 120.0 C /0ºC
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): -/-
Insulation (type/thickness): PPI / NONE (Channel: 25 mm) 1

ER-E-09

Service: R1 REACTOR MIXED FEED CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger
Heat Duty: 2097 kW
Surface Area: 657 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 115.0 C /-48ºC
Tube Design Pressure (Max / Min) @ Temperature.: 180.0 barg / x 120.0 C /-2ºC
Materials of Construction (Shell/Tubes): LTCS / CS
Trim (Shell/Tubes): VT-ER1378-3CA1S01-CC /-
Insulation (type/thickness): CC / 90.0 mm (Channel: NONE) 1



NOTES:

1. COOLING WATER BYPASS FOR DEFOULING/THROTTLING.
2. DELETED.
3. DELETED.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
5. ENSURE THAT ONE VALVE OPENS AS THE OTHER CLOSES AND THAT BOTH VALVES CANNOT BE CLOSED AT THE SAME TIME.
6. DELETED.
7. DELETED.
8. NOT USED.
9. DELETED.
10. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
11. DELETED.
12. POSITION FEEDBACK SIGNAL BY POSITIONER.
13. COLD SIDE OUTLET TO BE TAGGED: "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
14. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
15. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

1. DELETED.
54. DELETED.
64. DELETED.
65. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM.	NIKKO

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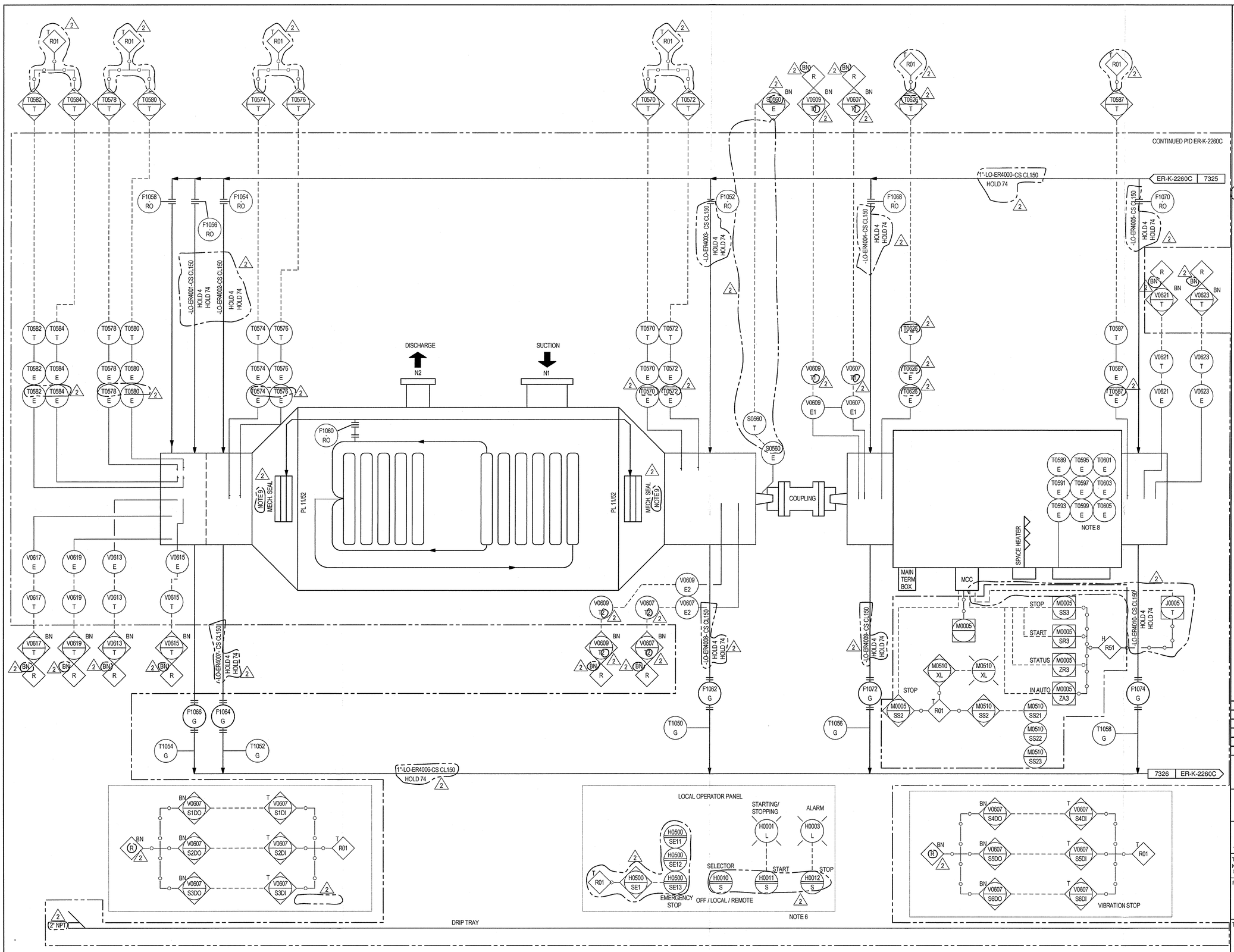
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 MIXED FEED COOLER 1

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2260A	1 OF 1	1



ER-P-08A
Service: R1 MIXED FEED HIGH PRESSURE PUMPS
Type: Horizontal centrifugal pump
Capacity: 274.0 m^3/hr
Differential Press.: 105.7 bar
Material of Construction: CS

NOTES:

1. TET (THERMAL EXPANSION TAG) SIGNS TO BE PROVIDED FOR BLOCK VALVE ON EXCHANGER.
2. ALL CABLE ENTRIES AND PE-CONNECTIONS ARE FROM BOTTOM SIDE (IF APPLICABLE).
3. CABLES WILL BE PROTECTED BY GALVANIZED CABLE TRAYS.
4. DELETED.
5. SET POINTS ARE MAXIMUM ALLOWABLE ALARM AND TRIP LIMITS FOR NORMAL OPERATION CONDITIONS. SPECIAL SET POINTS FOR START UP AND SHUT DOWN MUST BE STRICTLY LIMITED IN TIME. FINAL SET POINTS HAVE TO BE ADJUSTED AT SITE DURING THE COMMISSIONING.
6. LOCAL OPERATOR PANEL IS CONSISTING OF PUSH BUTTONS AND LAMPS ONLY. CONTROL ALGORITHMS AND/OR INTERLOCKS NEED TO BE EVALUATED IN DCS.
7. LOCAL EXPANSIONS ARE GIVEN FOR TEMPERATURE MEASUREMENT TO AVOID REDUCTIONS IN CROSS SECTION AND BETTER THERMAL FLOW.
8. TO MCC.
9. PLEASE, REFER TO EA-K-2011 FOR MECHANICAL SEAL DETAILS.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 MIXED FEED PUMP A INSTRUMENT DETAILS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2260B	1 OF 1	2

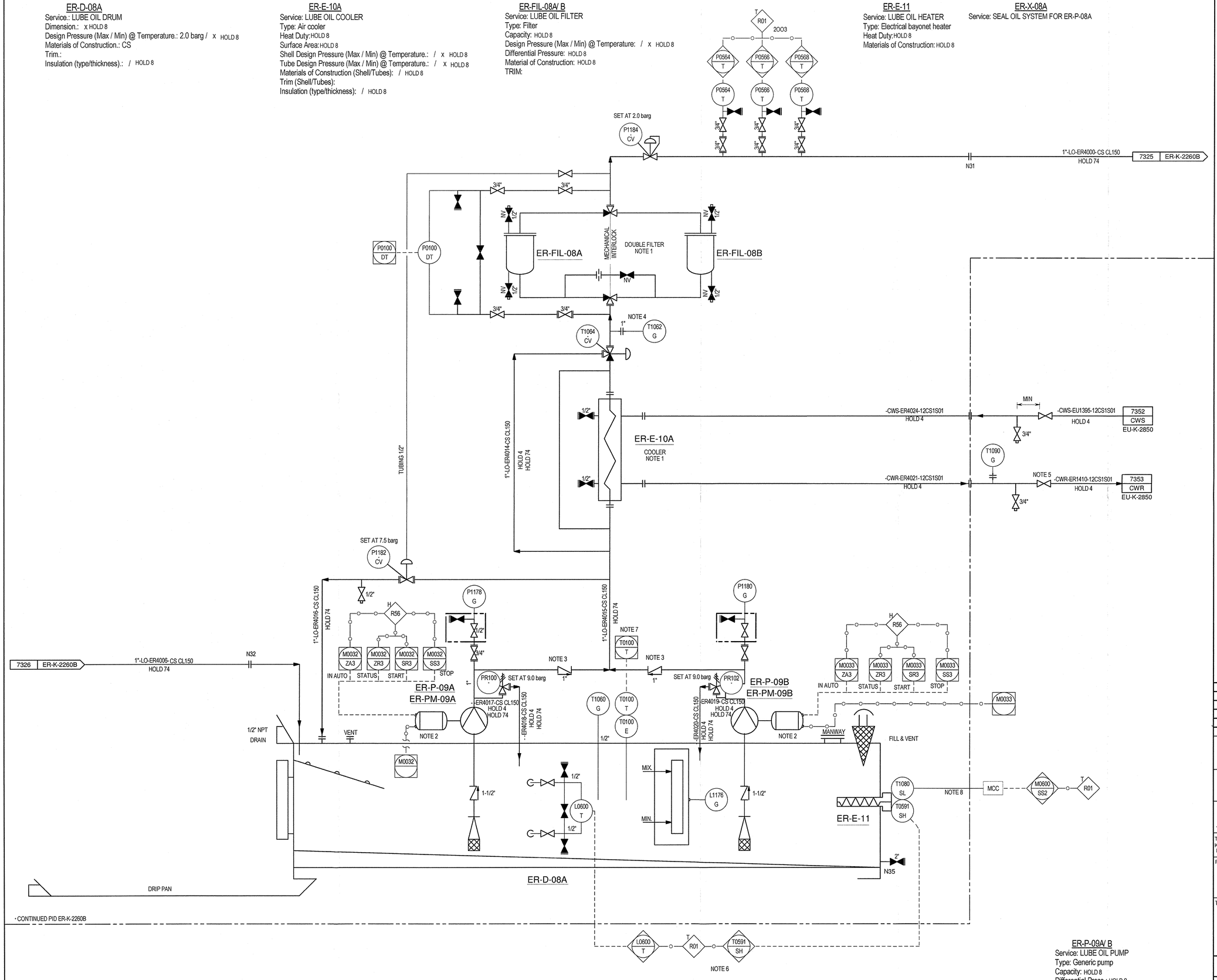
ER-D-08A
Service.: LUBE OIL DRUM
Dimension.: X HOLD 8
Design Pressure (Max / Min) @ Temperature.: 2.0 barg / X HOLD 8
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / HOLD 8

ER-E-10A
Service: LUBE OIL COOLER
Type: Air cooler
Heat Duty: HOLD 8
Surface Area: HOLD 8
Shell Design Pressure (Max / Min) @ Temperature.: / X HOLD 8
Tube Design Pressure (Max / Min) @ Temperature.: / X HOLD 8
Materials of Construction (Shell/Tubes): / HOLD 8
Trim (Shell/Tubes):
Insulation (type/thickness): / HOLD 8

ER-FIL-08A/ B
Service: LUBE OIL FILTER
Type: Filter
Capacity: HOLD 8
Design Pressure (Max / Min) @ Temperature: / X HOLD 8
Differential Pressure: HOLD 8
Material of Construction: HOLD 8
TRIM:

ER-E-11
Service: LUBE OIL HEATER
Type: Electrical bayonet heater
Heat Duty: HOLD 8
Materials of Construction: HOLD 8

ER-X-08A
Service: SEAL OIL SYSTEM FOR ER-P-08A



ER-P-09A/ B
Service: LUBE OIL PUMP
Type: Generic pump
Capacity: HOLD 8
Differential Press.: HOLD 8
Material of Construction: HOLD 8

NOTES:

1. DUAL FILTER WILL HAVE A LEVER TO SWAP LUBE OIL BETWEEN FILTERS.
2. ONE LUBE OIL PUMP SHALL TO BE SUPPLIED FROM UPS TO PREVENT LUBRICATION FAILURE DUE TO POWER LOSS FROM NON-UPS AT MCC.
3. CHECK VALVES HAVE BORED HOLE FOR LINE FILLING AND WARM-UP CIRCULATION.
4. LOCAL EXPANSIONS ARE GIVEN FOR TEMPERATURE MEASUREMENT TO AVOID REDUCTIONS IN CROSS SECTION AND BETTER THERMAL FLOW.
5. TET (THERMAL EXPANSION TAG) SIGNS TO BE PROVIDED FOR BLOCK VALVE ON EXCHANGER.
6. ACC. API 50 mm OVERLAPPING OF LUBE OIL FOR HEATER REQUIRED IN CASE OF LESS THAN 50 mm THE HEATER SHALL NOT BE OPERATED.
7. BELOW MIN. OPERATION TEMPERATURE OF 20°C FOR PUMP SKID, NO START-UP IS ALLOWED AND HEATER SHALL BE ACTIVE.
8. POWER SUPPLY TO HEATER.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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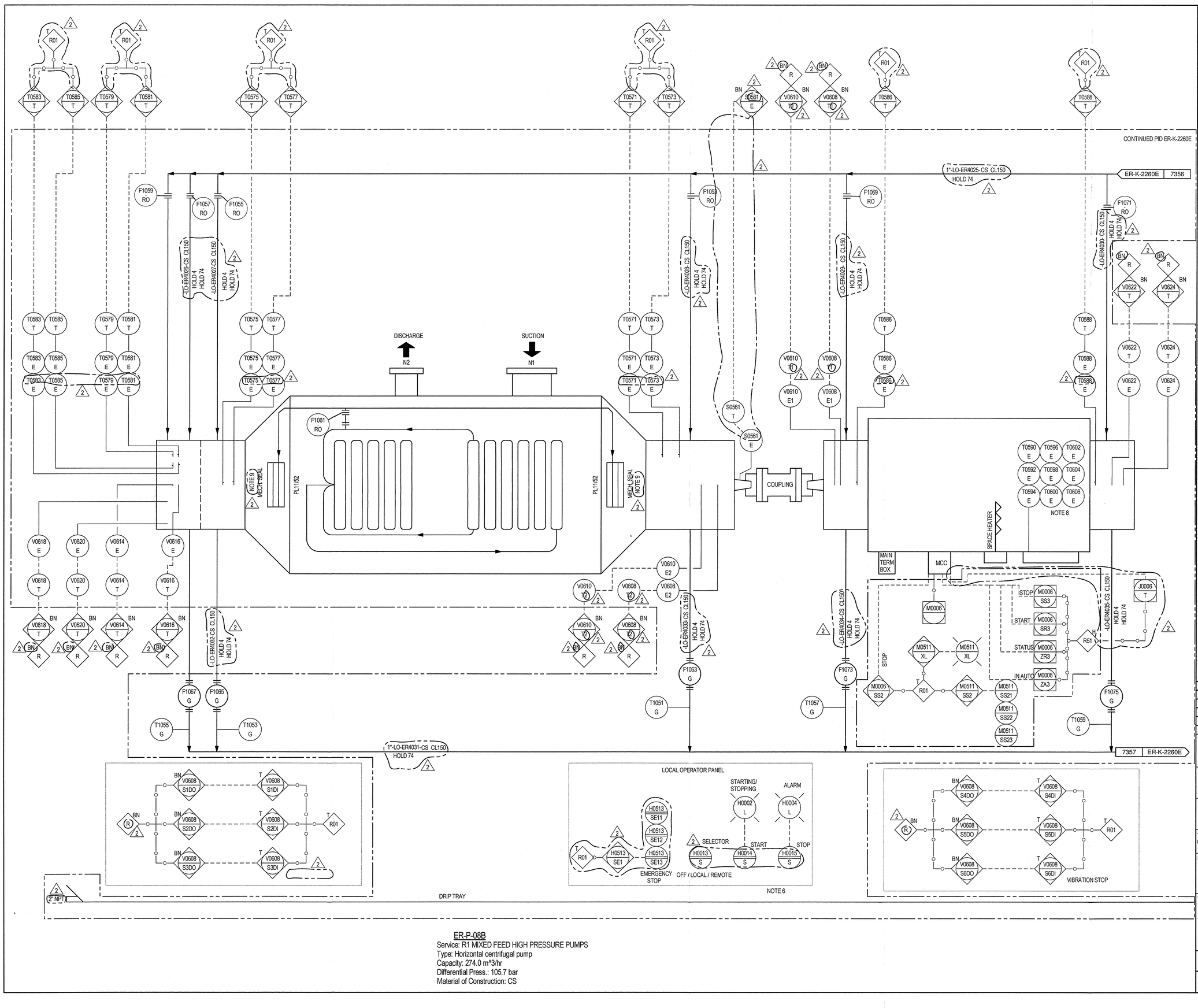
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 MIXED FEED PUMP A SEAL OIL SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2260C	1 OF 1	2



NOTES:

1. TET (THERMAL EXPANSION TAG) SIGNS TO BE PROVIDED FOR BLOCK VALVE ON EXCHANGER.
2. ALL CABLE ENTRIES AND PE-CONNECTIONS ARE FROM BOTTOM SIDE (IF APPLICABLE).
3. CABLES WILL BE PROTECTED BY GALVANIZED CABLE TRAYS.
4. DELETED.
5. SET POINTS ARE MAXIMUM ALLOWABLE ALARM AND TRIP LIMITS FOR NORMAL OPERATION CONDITIONS. SPECIAL SET POINTS FOR START UP AND SHUT DOWN MUST BE STRICTLY LIMITED IN TIME. FINAL SET POINTS HAVE TO BE ADJUSTED AT SITE DURING THE COMMISSIONING.
6. LOCAL OPERATOR PANEL IS CONSISTING OF PUSH BUTTONS AND LAMPS ONLY. CONTROL ALGORITHMS AND/OR INTERLOCKS NEED TO BE EVALUATED IN DCS.
7. LOCAL EXPANSIONS ARE GIVEN FOR TEMPERATURE MEASUREMENT TO AVOID REDUCTIONS IN CROSS SECTION AND BETTER THERMAL FLOW.
8. TO MCC.
9. PLEASE, REFER TO EA-K-2011 FOR MECHANICAL SEAL DETAILS.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

ER-P-08B
Service: R1 MIXED FEED HIGH PRESSURE PUMPS
Type: Horizontal centrifugal pump
Capacity: 274.0 m^3/hr
Differential Press.: 105.7 bar
Material of Construction: CS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	TRAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 MIXED FEED PUMP B INSTRUMENT DETAILS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2260D	1 OF 1	2

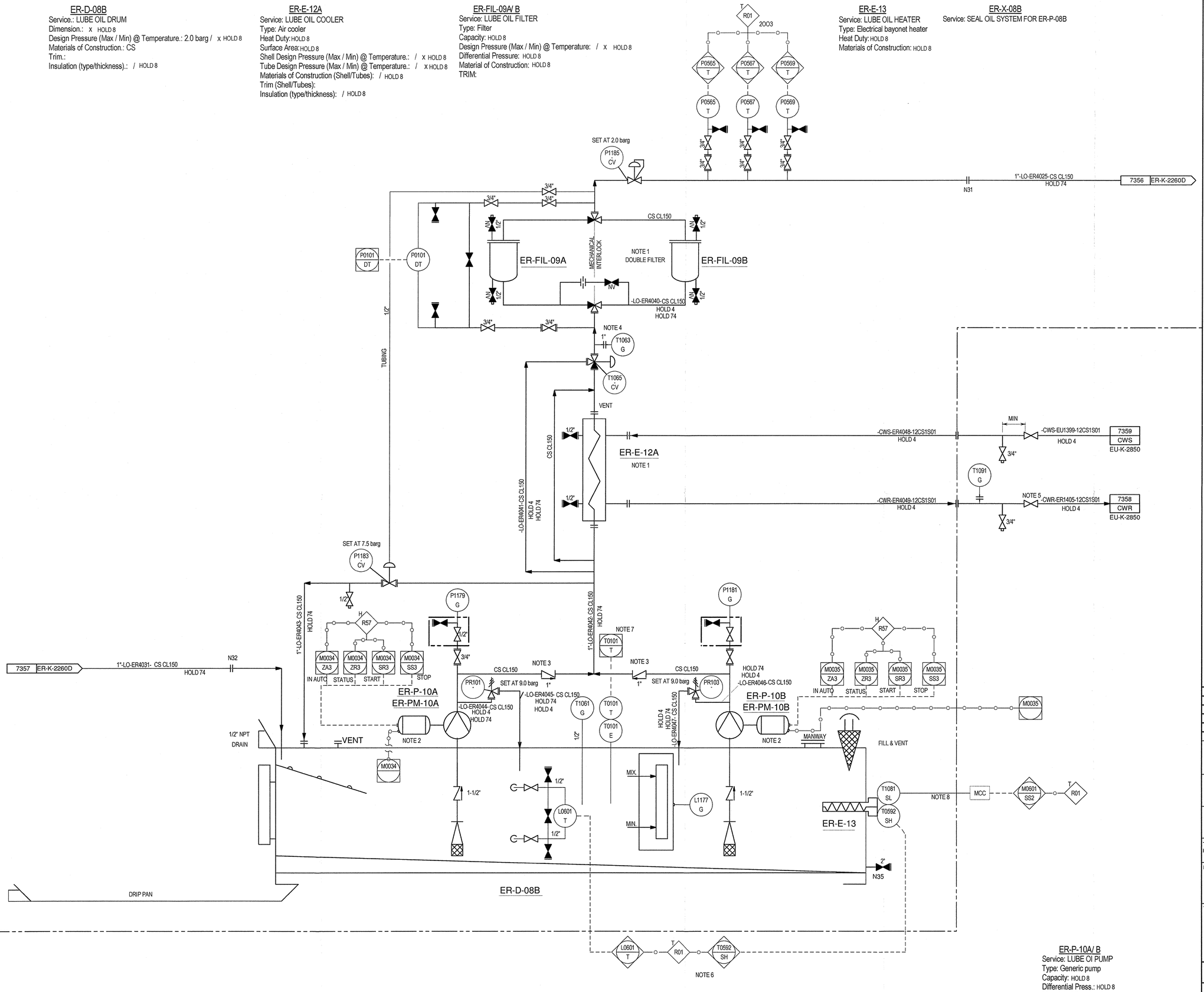
ER-D-08B
Service.: LUBE OIL DRUM
Dimension.: X HOLD 8
Design Pressure (Max / Min) @ Temperature.: 2.0 barg / X HOLD 8
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / HOLD 8

ER-E-12A
Service: LUBE OIL COOLER
Type: Air cooler
Heat Duty: HOLD 8
Surface Area: HOLD 8
Shell Design Pressure (Max / Min) @ Temperature.: / X HOLD 8
Tube Design Pressure (Max / Min) @ Temperature.: / X HOLD 8
Materials of Construction (Shell/Tubes): / HOLD 8
Trim (Shell/Tubes):
Insulation (type/thickness): / HOLD 8

ER-FIL-09A/ B
Service: LUBE OIL FILTER
Type: Filter
Capacity: HOLD 8
Design Pressure (Max / Min) @ Temperature: / X HOLD 8
Differential Pressure: HOLD 8
Material of Construction: HOLD 8
TRIM:

ER-E-13
Service: LUBE OIL HEATER
Type: Electrical bayonet heater
Heat Duty: HOLD 8
Materials of Construction: HOLD 8

ER-X-08B
Service: SEAL OIL SYSTEM FOR ER-P-08B



ER-P-10A/ B
Service: LUBE OI PUMP
Type: Generic pump
Capacity: HOLD 8
Differential Press.: HOLD 8
Material of Construction: HOLD 8

NOTES:

1. DUAL FILTER WILL HAVE A LEVER TO SWAP LUBE OIL BETWEEN FILTERS.
2. ONE LUBE OIL PUMP SHALL TO BE SUPPLIED FROM UPS TO PREVENT LUBRICATION FAILURE DUE TO POWER LOSS FROM NON-UPS AT MCC.
3. CHECK VALVES HAVE BORED HOLE FOR LINE FILLING AND WARM-UP CIRCULATION.
4. LOCAL EXPANSIONS ARE GIVEN FOR TEMPERATURE MEASUREMENT TO AVOID REDUCTIONS IN CROSS SECTION AND BETTER THERMAL FLOW.
5. TET (THERMAL EXPANSION TAG) SIGNS TO BE PROVIDED FOR BLOCK VALVE ON EXCHANGER.
6. ACC. API 50 mm OVERLAPPING OF LUBE OIL FOR HEATER REQUIRED IN CASE OF LESS THAN 50 mm THE HEATER SHALL NOT BE OPERATED.
7. BELOW MIN. OPERATION TEMPERATURE OF 20°C FOR PUMP SKID, NO START-UP IS ALLOWED AND HEATER SHALL BE ACTIVE.
8. POWER SUPPLY TO HEATER.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

kemya — al jubail petrochemical co.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 MIXED FEED PUMP B SEAL OIL SYSTEM

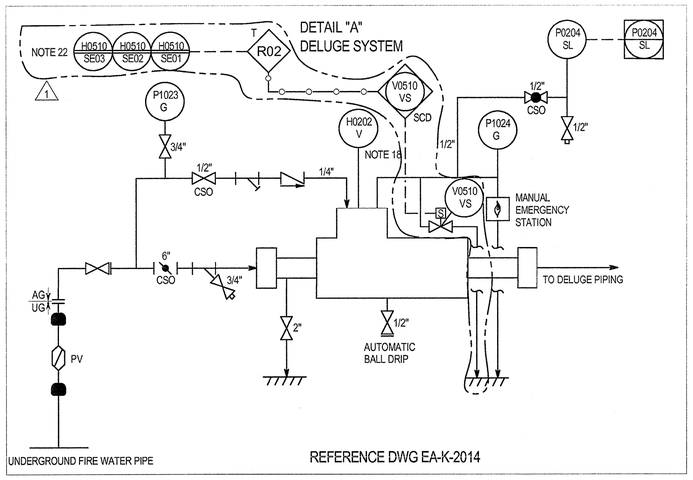
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2260E	1 OF 1	2

ER-R-10

Service.: R1 POLYMERIZATION REACTOR
Dimension.: 3550.0 mm x 3550.0 mm
Design Pressure (Max / Min) @ Temperature.: 145.0 barg / -1.0 barg x 227.0 C / 0 °C NOTE 2
Materials of Construction.: CS
Trim.: -
Insulation (type/thickness).: HC / 90.0 mm

ER-MA-10

Service: R1 POLYMERIZATION REACTOR AGITATOR
Materials of Construction: LTCS
Power Requirements: 260 kW
SPEED: 177 rpm



NOTES:

1. EMERGENCY DEPRESSURING VALVE.
2. REACTOR VESSEL VENDOR TO SPECIFY LOWEST MDMT ACHIEVABLE FOR SELECTED MATERIAL OF CONSTRUCTION.
3. MILD TRACING; NOT EXCEED 100°C.
4. MOUNT ROV'S FOR REACTOR SAMPLE LINES FLUSH WITH REACTOR OVERFLOW TO MINIMIZE DEAD VOLUME.
5. NOT USED.
6. PRIORITY 1 ALARM. HYDROCARBON GAS DETECTION FOR REACTOR MECHANICAL SEAL FAILURE.
7. RESTRICTION ORIFICE SHALL BE SIZED TO RELIEF THE CALCULATED FLOW RATE FOR DEPRESSURIZATION.
8. VALVE HANDLE TO BE ACCESSIBLE AND IN AN ERGONOMIC ARRANGEMENT TO ALLOW USE OF A HAND HELD PNEUMATIC TOOL.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
10. TEMPERED WATER TRACING. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C TO 70°C.
11 FOR FUTURE ONLINE ANALYZER. ORIENT UPWARD ON THE LINE.
12. MOUNTED ON OPERATOR CONSOLE IN CONTROL ROOM.
13. MOTOR POWER INDICATION NEEDED AT OPERATOR CONSOLE.
14. AVERAGE REACTOR TEMPERATURE CONTROLLED BY ADJUSTING CATALYST CONCENTRATION.
15. DELETED.
16. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN EC-PR-008 RELIEF VALVE SIZING.
17. DELETED.
18. COMMON VALVE FOR DELUGE ACTIVATION FOR BOTH REACTORS.
19. TRIPLE MECHANICAL SEAL WITH AUXILIARY SYSTEM API PLAN 59 SUPPLIED (VENDOR'S SEAL OIL SYSTEM PID TO BE PROVIDED).
20. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
21. PRV DISCHARGE LINE PIPE CONNECTION TO CEMENT BLOWDOWN DRUM HEADER SHALL BE DONE AT 45° IN THE HEADER FLOW DIRECTION.
22. HAND SWITCH MOUNTED IN A LOCAL AREA ESD PANEL. 1

HOLDS:

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Jubail, Kingdom of Saudi Arabia

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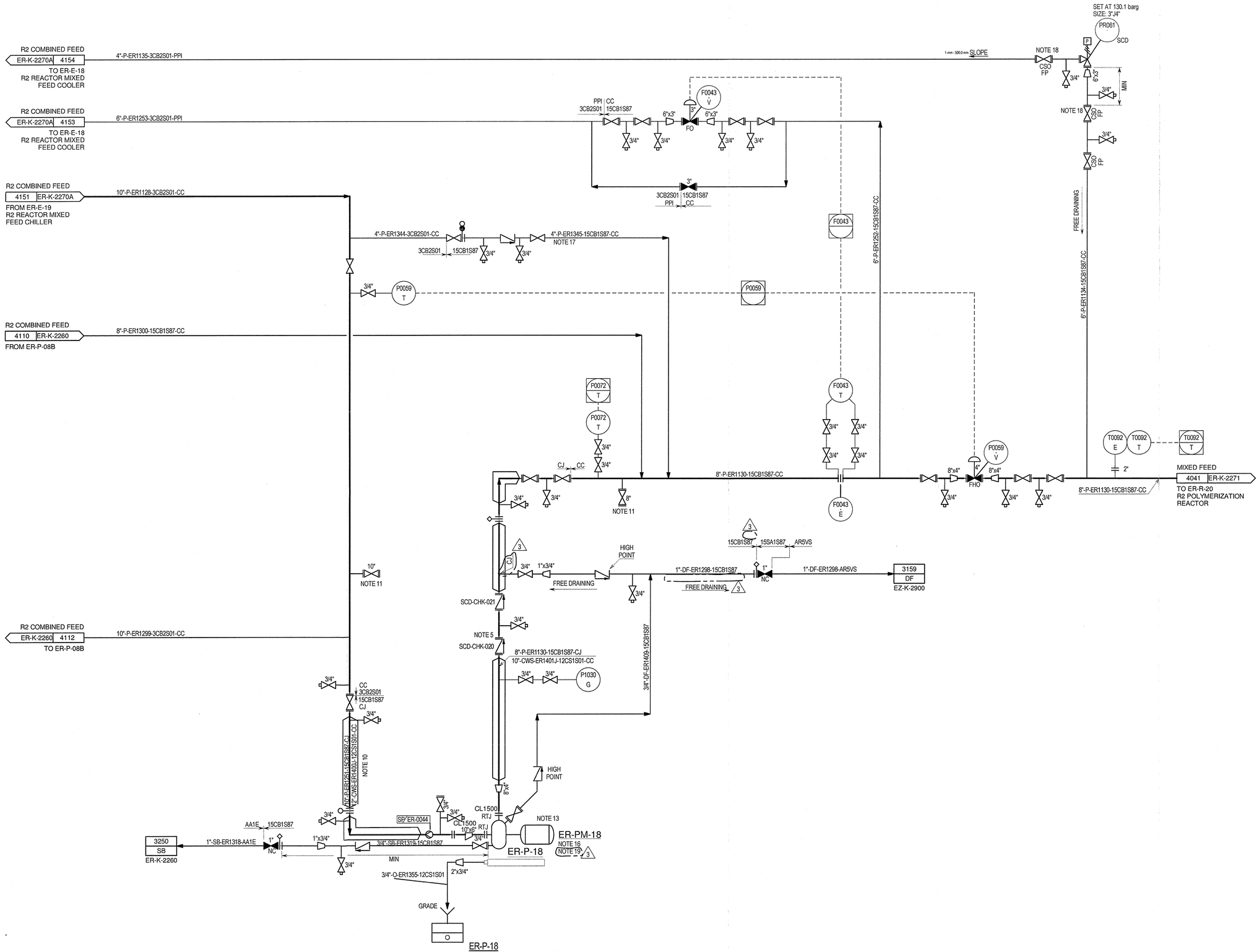
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R1 POLYMERIZATION REACTOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2261	1 OF 1	1



ER-P-18
Service: R2 MIXED FEED HIGH PRESSURE PUMP
Type: Horizontal centrifugal pump
Capacity: 166.0 m^3/hr
Differential Press.: 102.7 bar
Material of Construction: CS
Insulation: CJ

NOTES:

1. DELETED.
2. DELETED.
3. DELETED.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
5. DIFFERENT TYPE CHECK VALVES TO BE INSTALLED.
6. DELETED.
7. NOT USED.
8. NOT USED.
9. DCS INTERLOCK TO SHUT MONOMER CONTROL VALVES (ER-F0027-V: ETHYLENE, ER-F0025-V: COMONOMER, ER-F0023-V: ENB) IF ER-P-18 FAILS.
10. COOLING WATER TRACE AND INSULATION TO BE PROVIDED FOR THE PUMP CASING AS WELL AS THE INDIVIDUAL SUCTION AND DISCHARGE PIPE WITH COOLING WATER. INSULATION CODE FOR COOLING WATER TRACE APPLY CJ.
11. CONNECTION FOR FUTURE SPARE R2 MIXED FEED HIGH PRESSURE PUMP.
12. DELETED.
13. REQUIRES AUTOMATIC MACHINERY MONITORING AND CONTROLS/TRIP SYSTEM FOR EQUIPMENT PROTECTION.
14. DELETED.
15. DELETED.
16. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
17. START-UP LINE FOR SYSTEM FILL-UP.
18. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
19. EMERGENCY LOCAL PUSH BUTTON ERH0514 (P&ID ER-K-2260) TRIPS R2 MIXED FEED HIGH PRESSURE PUMP (ER-P-18), LOCATED ON ER-K-2260.

HOLDS:

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
3	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
2	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
1	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R2 MIXED FEED PUMPS

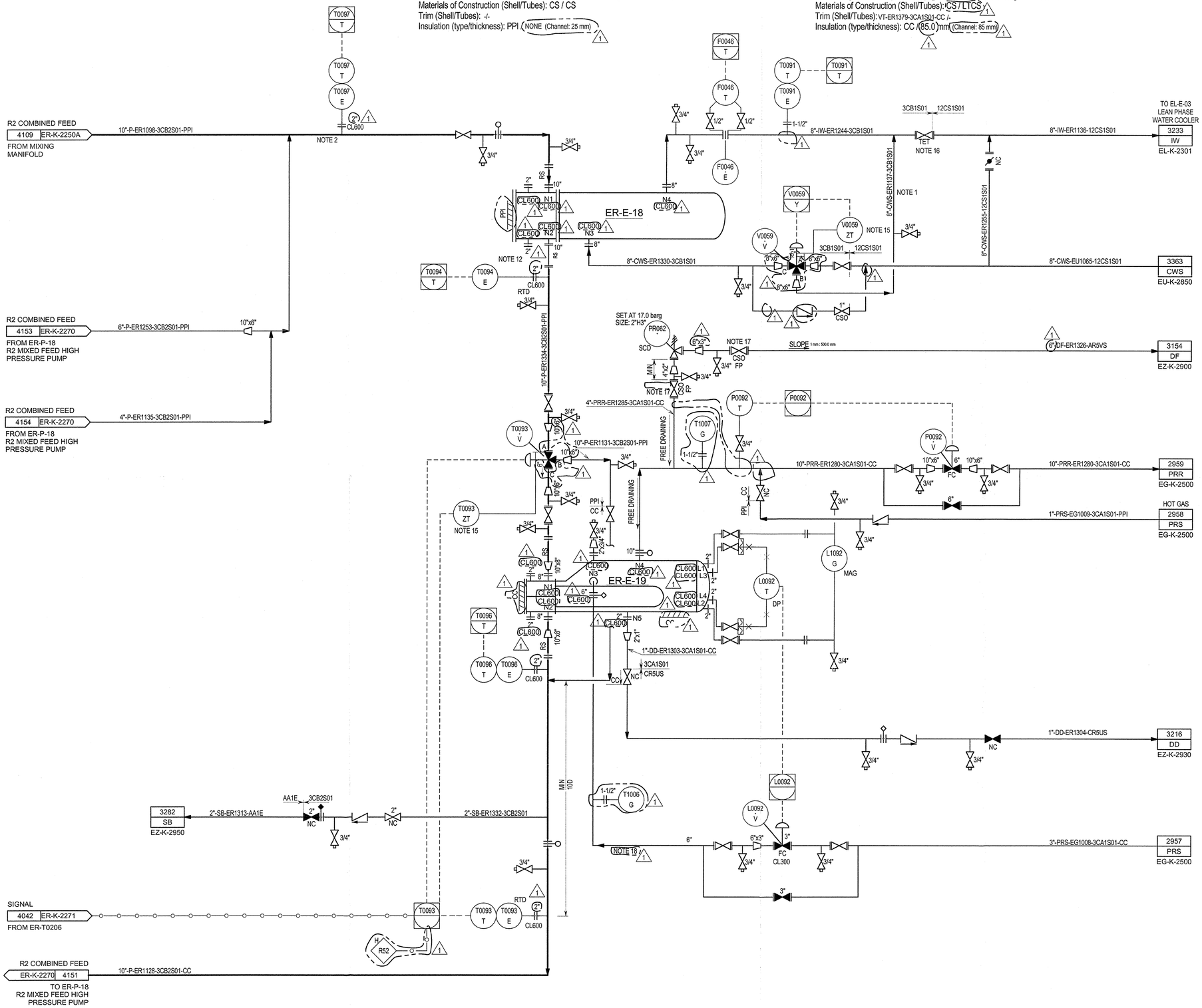
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2270	1 OF 1	3

ER-E-18

Service: R2 REACTOR MIXED FEED COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 404 kW
Surface Area: 341 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 34.7 barg / x 120.0 C / 0 ℃
Tube Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 120.0 C / 0 ℃
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): -/-
Insulation (type/thickness): PPI (NONE (Channel: 25 mm)) 1

ER-E-19

Service: R2 REACTOR MIXED FEED CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger
Heat Duty: 1384 kW
Surface Area: 333 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 34.7 barg / -1.0 barg x 115.0 C / -48 ℃
Tube Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 120.0 C / 0 ℃
Materials of Construction (Shell/Tubes): CS / LTCS 1
Trim (Shell/Tubes): VT-ER1379-3CA1S01-CC /-
Insulation (type/thickness): CC / (85.0 mm (Channel: 85 mm)) 1



NOTES:

1. COOLING WATER BYPASS FOR DEFOULING/THROTTLING.
2. SUPPORT FOR SLUG FLOW.
3. DELETED.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
5. DELETED.
6. DELETED.
7. NOT USED.
8. NOT USED.
9. DELETED.
10. DELETED.
11. DELETED.
12. RTD FOR MONITORING TO BE USED FOR CONTROL LOOP OR CALCULATION.
13. DELETED.
14. DELETED.
15. POSITION FEEDBACK SIGNAL BY POSITIONER.
16. COLD SIDE OUTLET TO BE TAGGED: "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".
17. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
18. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

1. DELETED, NULL
53. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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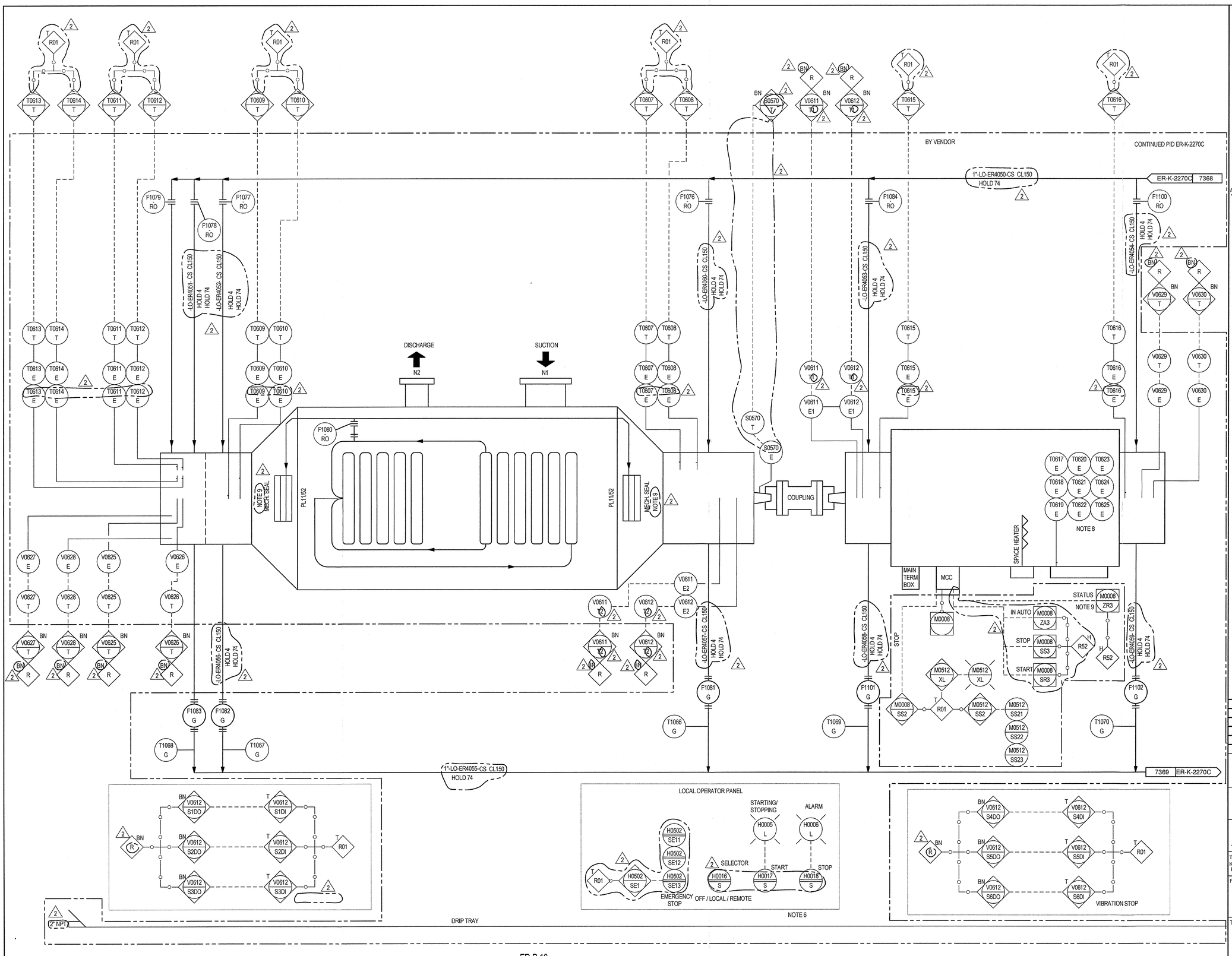
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R2 MIXED FEED COOLER 1

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ER-K-2270A	1 OF 1	1



NOTES:

1. TET (THERMAL EXPANSION TAG) SIGNS TO BE PROVIDED FOR BLOCK VALVE ON EXCHANGER.
2. ALL CABLE ENTRIES AND PE-CONNECTIONS ARE FROM BOTTOM SIDE (IF APPLICABLE).
3. CABLES WILL BE PROTECTED BY GALVANIZED CABLE TRAYS.
4. DELETED.
5. SET POINTS ARE MAXIMUM ALLOWABLE ALARM AND TRIP LIMITS FOR NORMAL OPERATION CONDITIONS. SPECIAL SET POINTS FOR START UP AND SHUT DOWN MUST BE STRICTLY LIMITED IN TIME. FINAL SET POINTS HAVE TO BE ADJUSTED AT SITE DURING THE COMMISSIONING.
6. LOCAL OPERATOR PANEL IS CONSISTING OF PUSH BUTTONS AND LAMPS ONLY. CONTROL ALGORITHMS AND/OR INTERLOCKS NEED TO BE EVALUATED IN DCS.
7. LOCAL EXPANSIONS ARE GIVEN FOR TEMPERATURE MEASUREMENT TO AVOID REDUCTIONS IN CROSS SECTION AND BETTER THERMAL FLOW.
8. TO MCC.
9. PLEASE, REFER TO EA-K-2011 FOR MECHANICAL SEAL DETAILS.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

ER-P-18
Service: R2 MIXED FEED HIGH PRESSURE PUMP
Type: Horizontal centrifugal pump
Capacity: 166.0 m^3/hr
Differential Press.: 102.7 bar
Material of Construction: CS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM

R2 MIXED FEED PUMP A INSTRUMENT DETAILS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2270B	1 OF 1	2

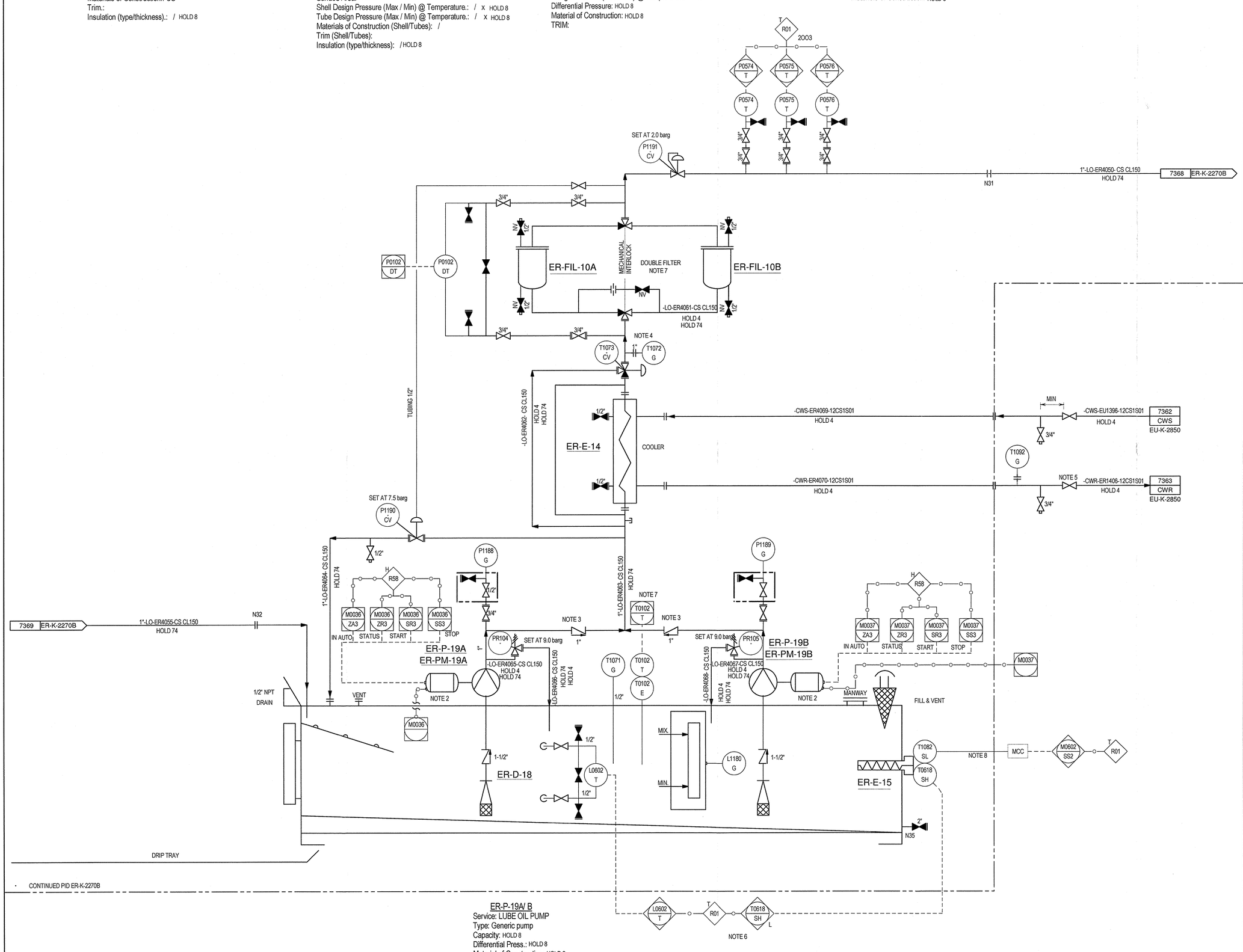
ER-D-18
Service.: LUBE OIL DRUM
Dimension.: x HOLD 8
Design Pressure (Max / Min) @ Temperature.: 2.0 barg / x HOLD 8
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / HOLD 8

ER-E-14
Service: LUBE OIL COOLER
Type: Air cooler
Heat Duty: HOLD 8
Surface Area: HOLD 8
Shell Design Pressure (Max / Min) @ Temperature.: / x HOLD 8
Tube Design Pressure (Max / Min) @ Temperature.: / x HOLD 8
Materials of Construction (Shell/Tubes): /
Trim (Shell/Tubes):
Insulation (type/thickness): / HOLD 8

ER-FIL-10A/ B
Service: LUBE OIL FILTER
Type: Filter
Capacity: HOLD 8
Design Pressure (Max / Min) @ Temperature: / x HOLD 8
Differential Pressure: HOLD 8
Material of Construction: HOLD 8
TRIM:

ER-E-15
Service: LUBE OIL HEATER
Type: Electrical bayonet heater
Heat Duty: HOLD 8
Materials of Construction: HOLD 8

ER-X-18
Service: SEAL OIL SYSTEM FOR ER-P-18



ER-P-19A/ B
Service: LUBE OIL PUMP
Type: Generic pump
Capacity: HOLD 8
Differential Press.: HOLD 8
Material of Construction: HOLD 8

NOTES:

1. DUAL FILTER WILL HAVE A LEVER TO SWAP LUBE OIL BETWEEN FILTERS.
2. ONE LUBE OIL PUMP SHALL TO BE SUPPLIED FROM UPS TO PREVENT LUBRICATION FAILURE DUE TO POWER LOSS FROM NON-UPS AT MCC.
3. CHECK VALVES HAVE BORED HOLE FOR LINE FILLING AND WARM-UP CIRCULATION.
4. LOCAL EXPANSIONS ARE GIVEN FOR TEMPERATURE MEASUREMENT TO AVOID REDUCTIONS IN CROSS SECTION AND BETTER THERMAL FLOW.
5. TET (THERMAL EXPANSION TAG) SIGNS TO BE PROVIDED FOR BLOCK VALVE ON EXCHANGER.
6. ACC. API 50 mm OVERLAPING OF LUBE OIL FOR HEATER REQUIRED IN CASE OF LESS THAN 50 mm THE HEATER SHALL NOT BE OPERATED.
7. BELOW MIN. OPERATION TEMPERATURE OF 20°C FOR PUMP SKID, NO START-UP IS ALLOWED AND HEATER SHALL BE ACTIVE.
8. POWER SUPPLY TO HEATER.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
74. PIPING SPEC TO BE DEFINED/CONFIRMED WITH VENDOR INFORMATION.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	21/10/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM

R2 MIXED FEED PUMP A SEAL OIL SYSTEM

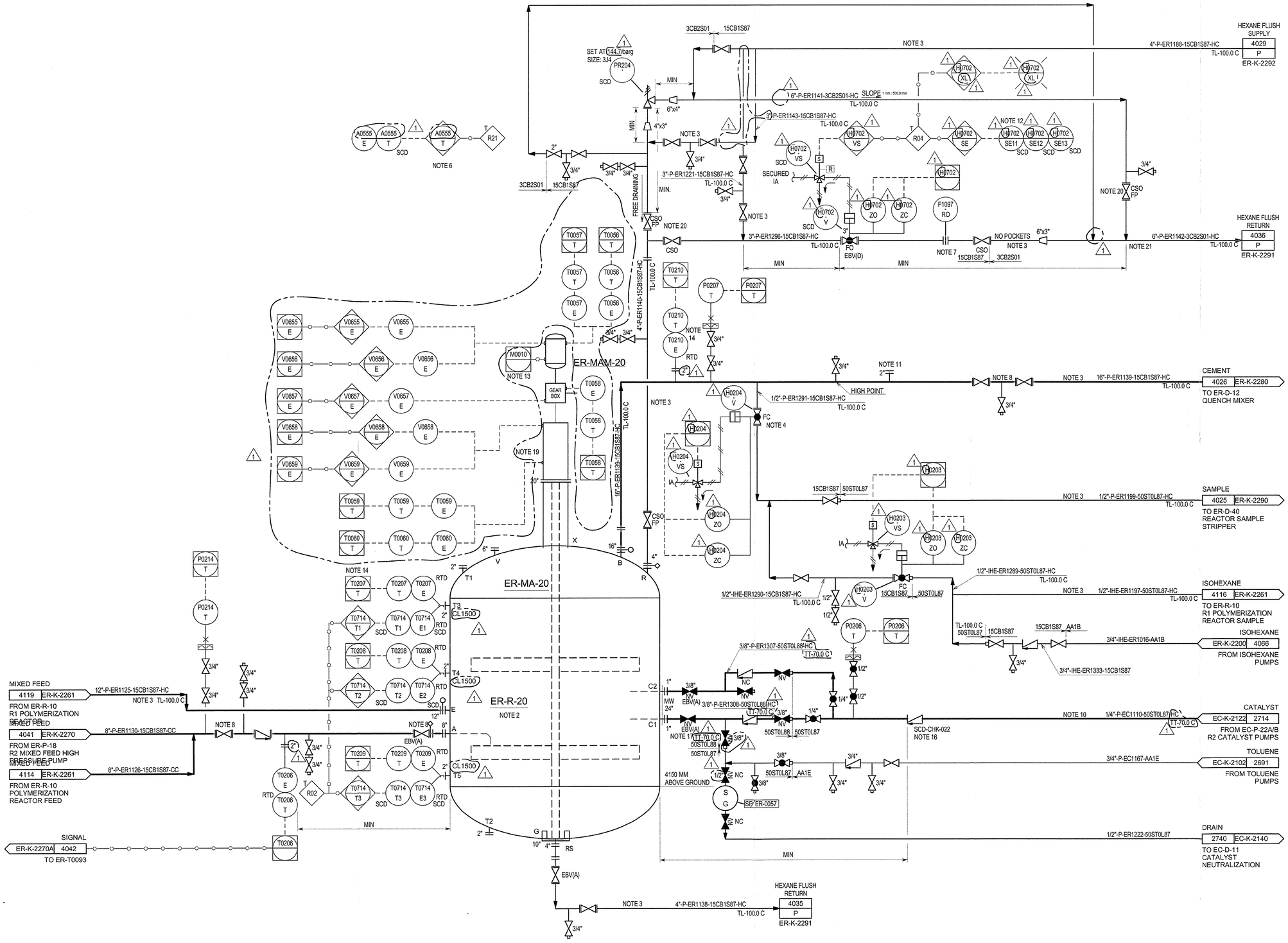
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ER-K-2270C	1 OF 1	2

ER-R-20

Service.: R2 POLYMERIZATION REACTOR
Dimension.: 3550.0 mm x 3550.0 mm
Design Pressure (Max / Min) @ Temperature.: 145.0 barg / -1.0 barg x 227.0 C / 0 °C NOTE 2
Materials of Construction.: CS
Trim.: -
Insulation (type/thickness).: HC / 90.0 mm

ER-MA-20

Service: R2 POLYMERIZATION REACTOR AGITATOR
Materials of Construction: CS
Power Requirements: 260 kW
SPEED: 177 rpm



NOTES:

1. DELETED.
2. REACTOR VESSEL VENDOR TO SPECIFY LOWEST MDMT ACHIEVABLE FOR SELECTED MATERIAL OF CONSTRUCTION.
3. MILD TRACING; NOT EXCEED 100°C.
4. MOUNT ROV'S FOR REACTOR SAMPLE LINES FLUSH WITH REACTOR OVERFLOW TO MINIMIZE DEAD VOLUME.
5. NOT USED.
6. PRIORITY 1 ALARM. HYDROCARBON GAS DETECTION FOR REACTOR MECHANICAL SEAL FAILURE.
7. RESTRICTION ORIFICE SHALL BE SIZED TO RELIEF THE CALCULATED FLOW RATE FOR DEPRESSURIZATION.
8. VALVE HANDLE TO BE ACCESSIBLE AND IN AN ERGONOMIC ARRANGEMENT TO ALLOW USE OF A HAND HELD PNEUMATIC TOOL.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
10. TEMPERED WATER TRACING. TEMPERATURE RANGE TO BE ADJUSTABLE BETWEEN 40°C TO 70°C.
11. FOR FUTURE ONLINE ANALYZER. ORIENT UPWARD ON THE LINE.
12. MOUNTED ON OPERATOR CONSOLE IN CONTROL ROOM.
13. MOTOR POWER INDICATION NEEDED AT OPERATOR CONSOLE.
14. AVERAGE REACTOR TEMPERATURE CONTROLLED BY ADJUSTING CATALYST CONCENTRATION.
15. DELETED.
16. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN EC-PR-018 RELIEF VALVE SIZING.
17. DELETED.
18. COMMON DELUGE SYSTEM FOR BOTH REACTORS. REFER TO ER-K-2261.
19. TRIPLE MECHANICAL SEAL WITH AUXILIARY SYSTEM API PLAN 54 SUPPLIED (VENDOR'S SEAL OIL SYSTEM PID TO BE PROVIDED).
20. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
21. PRV DISCHARGE LINE PIPE CONNECTION TO CEMENT BLOWDOWN DRUM HEADER SHALL BE DONE AT 45° IN THE HEADER FLOW DIRECTION.

HOLDS:

1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
R2 POLYMERIZATION REACTOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

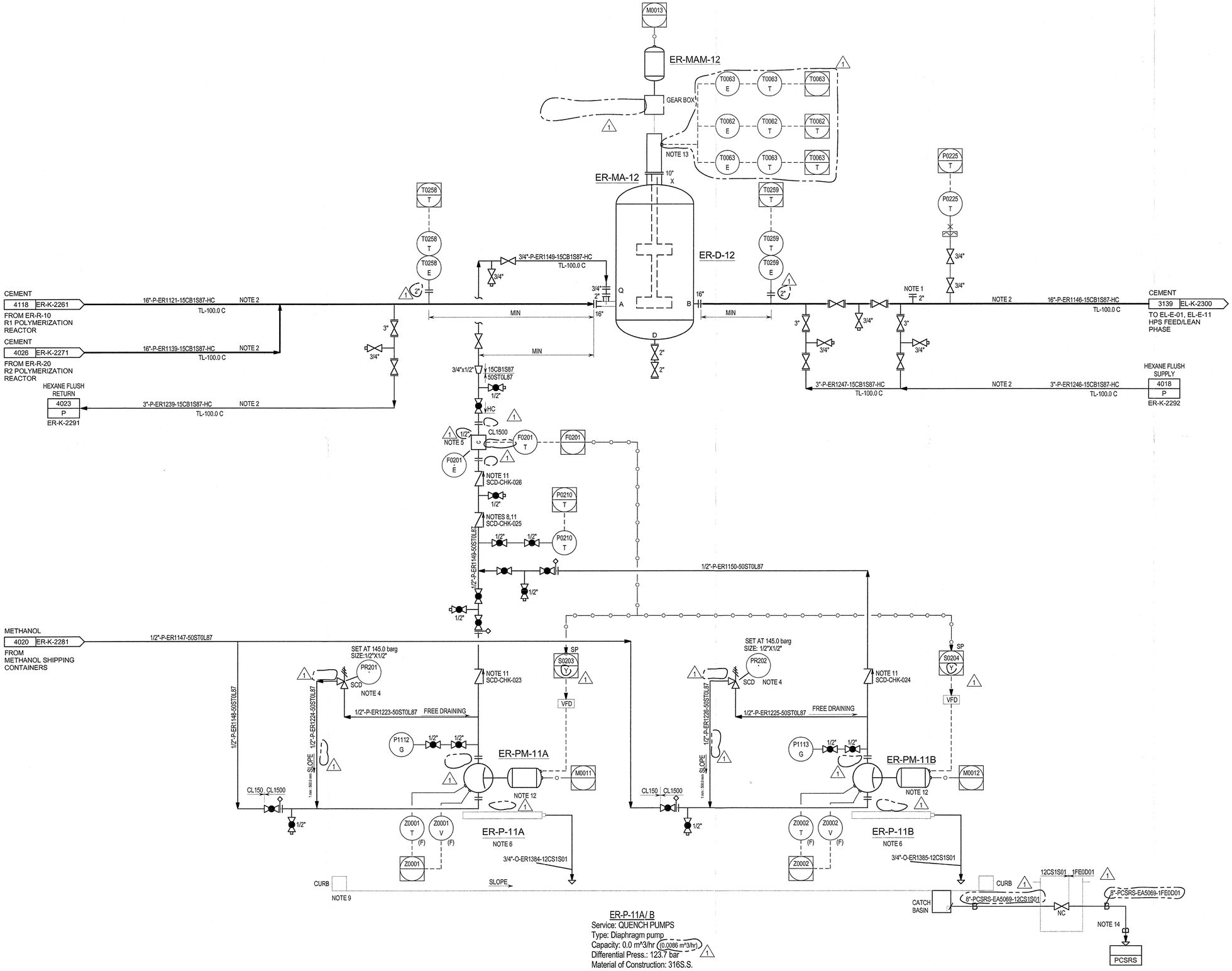
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2271	1 OF 1	1

ER-D-12

Service.: QUENCH MIXER
Dimension.: 600.0 mm x 900.0 mm
Design Pressure (Max / Min) @ Temperature.: 145.0 barg / -1.0 barg x 227.0 C /0°C
Materials of Construction.: CS
Trim.: VT-ER1380-15CB1S87-HC
Insulation (type/thickness).: HC / 90.0 mm

ER-MA-12

Service: QUENCH MIXER AGITATOR
Materials of Construction: CS
Power Requirements: 11 kW
SPEED: 975 rpm



ER-P-11A/ B

Service: QUENCH PUMPS
Type: Diaphragm pump
Capacity: 0.0 m^3/hr (0.0086 m^3/hr)
Differential Press.: 123.7 bar
Material of Construction: 316S.S.

NOTES:

1. FUTURE CONNECTION FOR CEMENT COMPOSITION ANALYZER SAMPLE POINT. ORIENT UPWARD ON THE LINE.
2. MILD TRACING; NOT EXCEED 100°C.
3. NOT USED.
4. SWAGELOK R3A MODEL OR EQUIVALENT.
5. MINIMIZE FITTINGS/VALVES (POTENTIAL LEAKAGE POINTS) BETWEEN FLOW METER AND QUENCH MIXER.
6. PUMPS TO BE LOCATED IN A SEPARATE CURBED AREA.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
8. SPRING CHECK VALVE.
9. COMMON CURB FOR ER-P-11A/B AND ED-P-65.
10. DELETED.
11. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN ER-PR-229 RELIEF VALVE SIZING.
12. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
13. TRIPLE MECHANICAL SEAL WITH AUXILIARY SYSTEM API PLAN 54 SUPPLIED (VENDOR'S SEAL OIL SYSTEM P&ID TO BE PROVIDED).
14. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWINGS.

HOLDS:

2. DELETED.
4. DELETED.
54. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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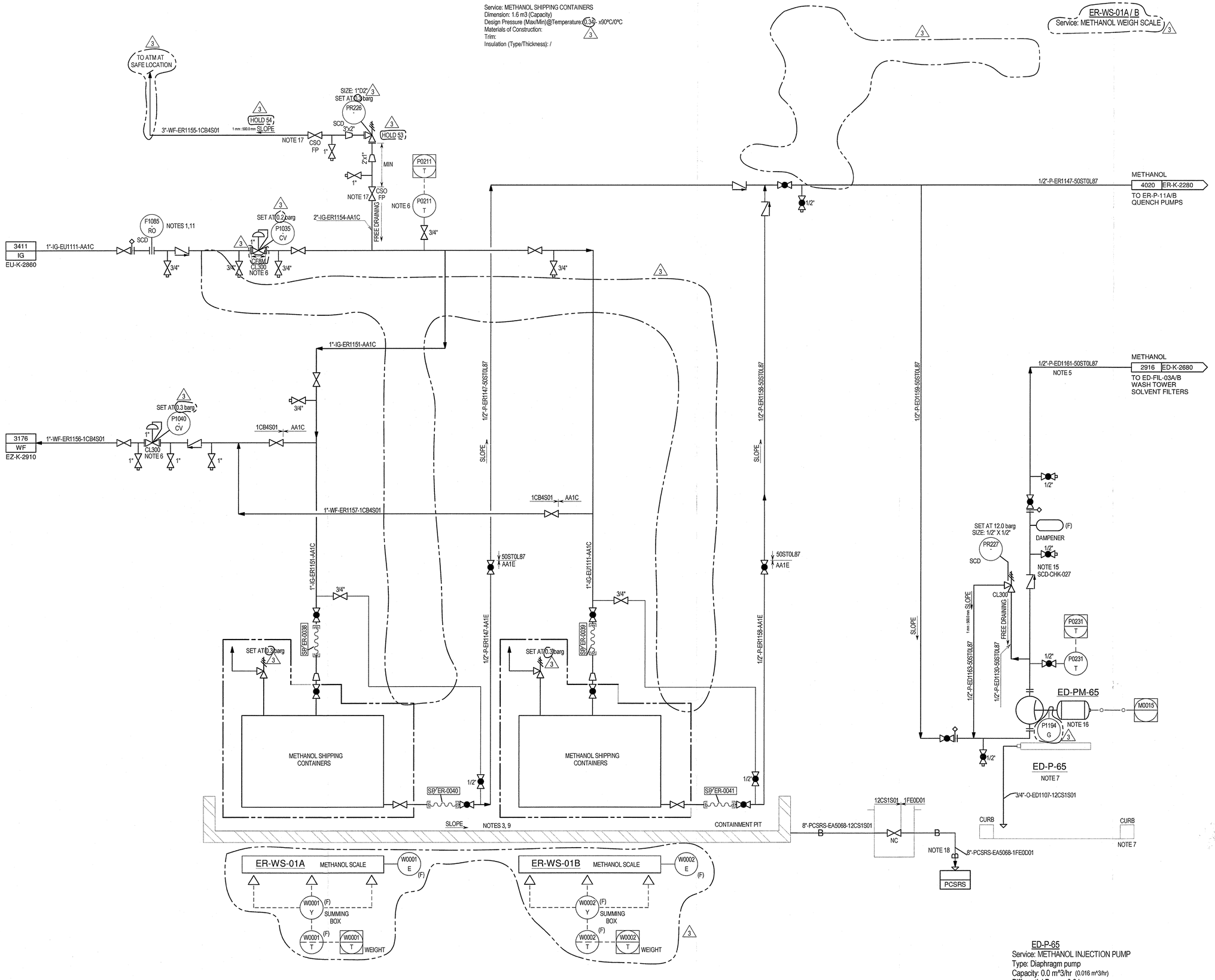
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
QUENCH MIXER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2280	1 OF 1	1

Service: METHANOL SHIPPING CONTAINERS
Dimension: 1.6 m3 (Capacity)
Design Pressure (Max/Min)@Temperature: 0.34 x90ºC/0ºC
Materials of Construction:
Trim:
Insulation (Type/Thickness): /



ED-P-65
Service: METHANOL INJECTION PUMP
Type: Diaphragm pump
Capacity: 0.0 m^3/hr (0.016 m^3/hr)
Differential Press.: 6.0 bar
Material of Construction: 316 S.S.

NOTES:

1. RO IS INSTALLED ON NITROGEN SUPPLY LINE UPSTREAM ON RELIEF VALVE TO LIMIT THE RELIEVING RATE SAFETY CRITICAL SIGN SHALL BE INSTALLED ON RESTRICTION ORIFICE.
2. NOT USED.
3. ELEVATE METHANOL CONTAINERS 2-3 METERS ABOVE GRADE TO PROVIDE ADEQUATE NPSH FOR PUMPS.
4. DELETED. 3
5. PARTIAL HARD PIPING WILL BE REQUIRED WHEN ROUTING ON THE PIPERACK WITH THE PIPE SUPPORT.
6. PI TO BE READABLE FROM ASSOCIATED PCV.
7. PUMPS TO BE LOCATED IN THE SAME CURB OF ER-P-11A/B.
8. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
9. CAPACITY OF DIKE TO BE DETERMINED BASED ON SPILL OF ONE CONTAINER.
10. DELETED.
11. SIZING OF DIAMETER TO BE DETERMINED BASED ON VENT SIZE OF CONTAINERS.
12. DELETED.
13. NOT USED.
14. DELETED.
15. SAFETY CRITICAL CHECK VALVE TO MINIMIZE BACKFLOW. CREDIT IS TAKEN IN ER-PR-229 RELIEF VALVE SIZING.
16. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
17. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
18. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWINGS.

HOLDS: 3

53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
3	16/10/2013	FINAL ISSUE REVISED	MCG	PSA	RAF
2	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

kemya — al jubail petrochemical co.

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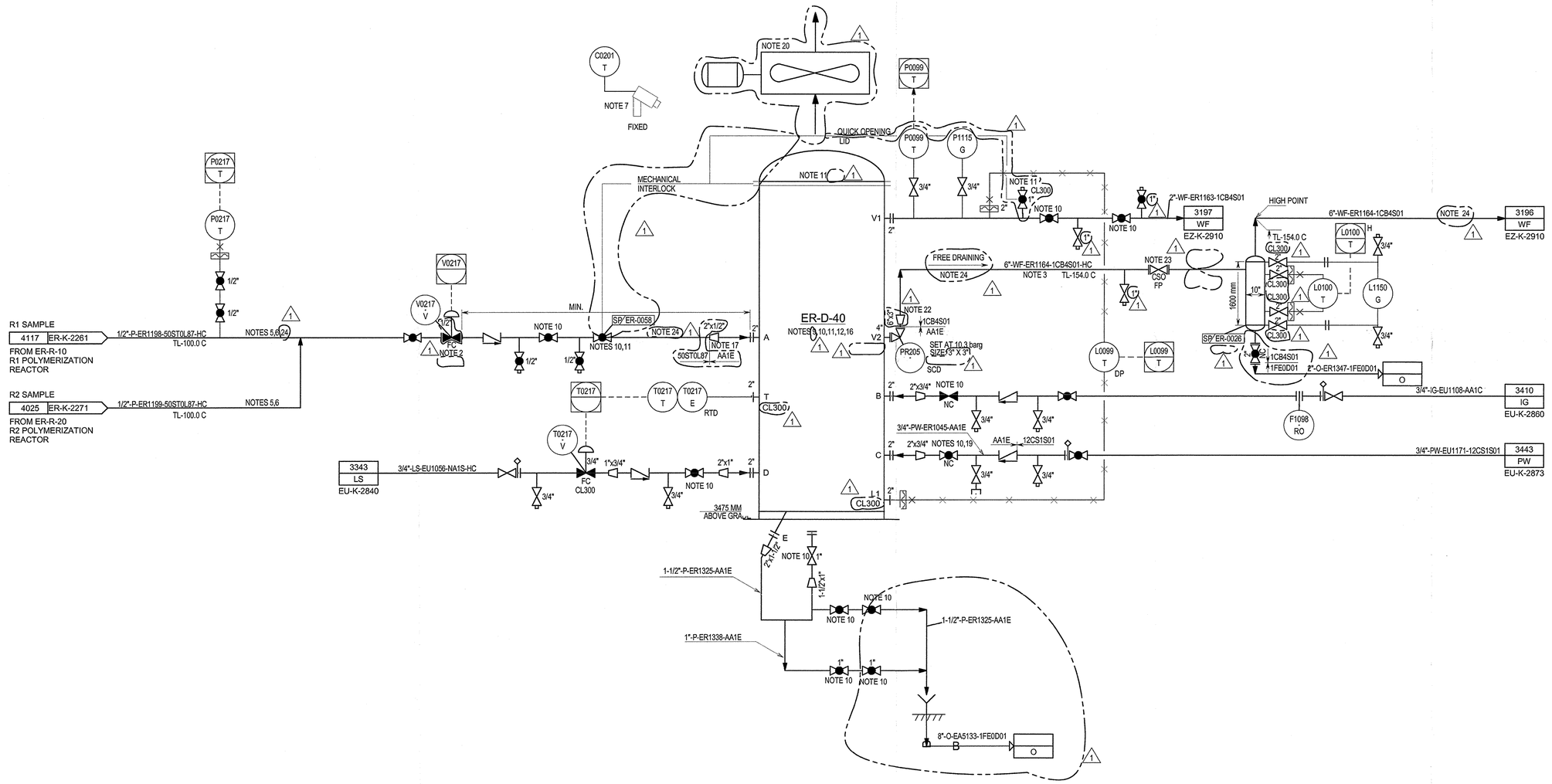
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
METHANOL STORAGE & PUMPS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2281	1 OF 1	3

ER-D-40

Service.: REACTOR SAMPLE STRIPPER DRUM
Dimension.: 450.0 mm x 900.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / -1.0 barg x 240.0 C/0ºC
NOTE 21 Materials of Construction.: 304 S.S.
Trim.:VT-ER1381-AA1E-HC
Insulation (type/thickness).: HC / 90.0 mm



NOTES:

1. DELETED.
2. ER-V0217-V COEFFICIENT NOT TO EXCEED 1.1.
3. PIPING TO BE DESIGNED FOR SLUG FLOW.
4. PAD MOUNTED RUPTURE PIN FLUSH WITH INSIDE THE WALL OF VESSEL.
5. MILD TRACING NOT TO EXCEED 100°C.
6. MINIMIZE SAMPLE LINE LENGTHS (<10 METERS LENGTH)
7. POSITION FOR REMOTE VIEWING OF ER-D-40 SAMPLING.
8. DELETED. △1
9. VESSEL TO BE LINED WITH FLUOROLON 110 HB PFA OR EQUIVALENT.
10. ALL VALVES ASSOCIATED WITH THE SAMPLING PROCEDURE TO BE ACCESSIBLE AND LOCATED CLOSE TO ER-D-40.
11. INCLUDE A "CAPTURE KEY" SYSTEM ENSURING THAT SAMPLE VALVE IS CLOSED AND BLEEDERS ARE OPEN BEFORE OPENING THE LID.
12. ER-D-40 HAS AUTOMATED SAMPLE SEQUENCE (WITH MANUAL, RESET). VALVES CONTROLLED IN THE SEQUENCE ARE:

    ER-V0217-V
    ER-T0217-V
    ER-V0201-V (P&ID ER-K-2261)
    ER-V0202-V (P&ID ER-K-2261)
    ER-V0203-V (P&ID ER-K-2271)
    ER-V0204-V (P&ID ER-K-2271)

13. DELETED.
14. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
15. DELETED.
16. PLOT SPACE FOR THE SECOND REACTOR SAMPLE STRIPPER DRUM TO BE PROVIDED.
17. FULL BORE TUBING FITTING ON FLANGE.
18. DELETED.
19. PROVIDE SPRING-LOADED BALL VALVE.
20. PROVIDE A LOCAL FAN FOR BLOWING AWAY GENERATED STEAM WHEN LID IS INITIALLY OPEN.
21. PFA LINED.
22. RUPTURE PIN.
23. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
24. TWO PHASE FLOW POSIBLE UNSTABLE FLOW. △1

HOLDS:

1. CONTROL VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
2. DELETED.
3. DELETED.
53. DELETED.
54. DELETED.
68. DELETED. △1

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C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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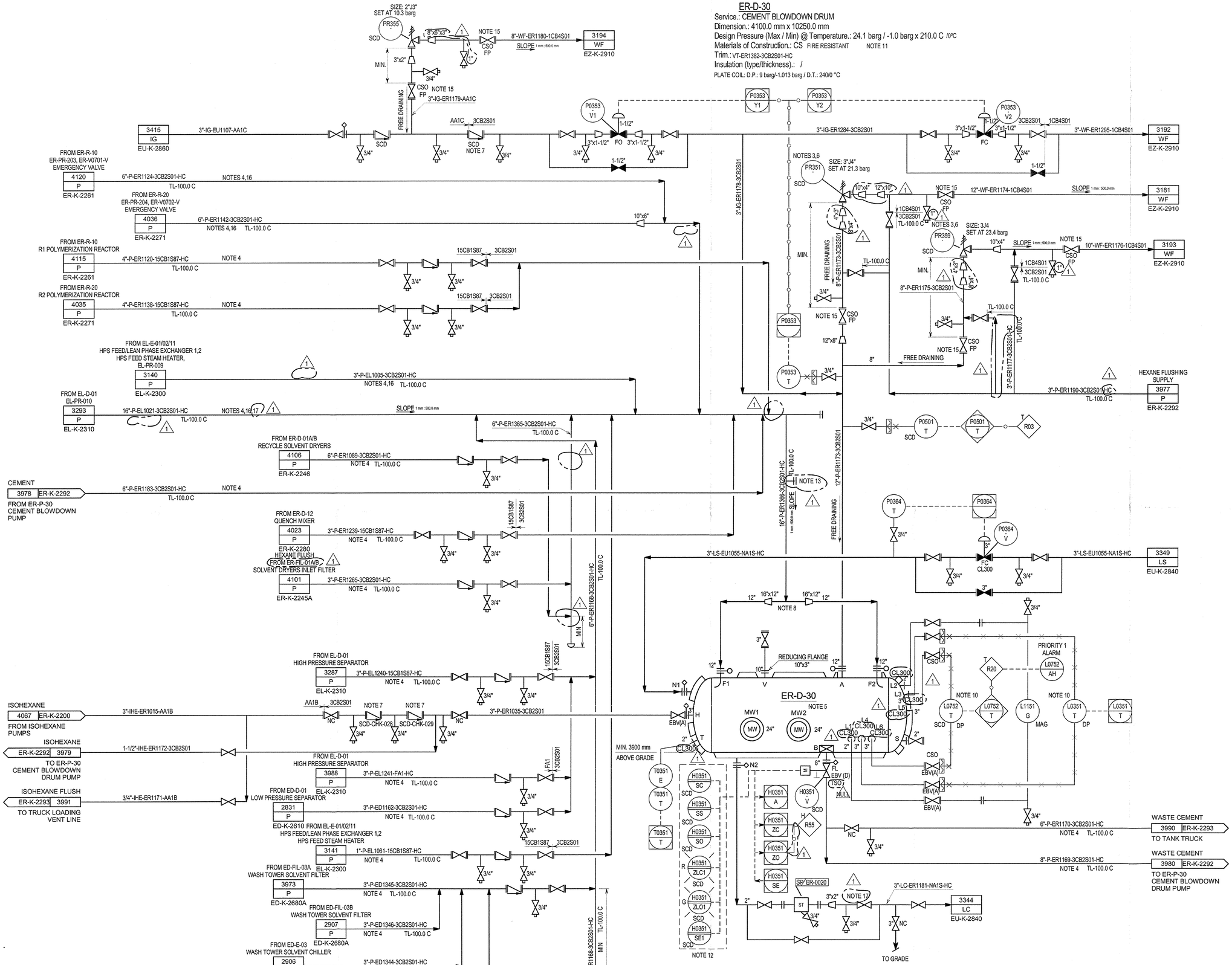
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
REACTOR SAMPLE SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2290	1 OF 1	1

ER-D-30

Service.: CEMENT BLOWDOWN DRUM
Dimension.: 4100.0 mm x 10250.0 mm
Design Pressure (Max / Min) @ Temperature.: 24.1 barg / -1.0 barg x 210.0 C /0ºC
Materials of Construction.: CS FIRE RESISTANT NOTE 11
Trim.: VT-ER1382-3CB2S01-HC
Insulation (type/thickness).: /
PLATE COIL: D.P.: 9 barg/-1.013 barg / D.T.: 240/0 °C



NOTES:

1. DELETED.
2. DELETED.
3. TWO PARALLEL PSVS OF HALF CAPACITY EACH ARE PROVIDED TO KEEP THE VESSEL BELOW HYDROTEST PRESSURE IN THE EVENT OF ONE PSV FOULING.
4. MILD TRACING; NOT TO EXCEED 100°C.
5. ER-D-30 IS THE DISPOSITION FOR VARIOUS LIQUID/VAPOR SAFETY VALVE DISCHARGES AND THEREFORE IS SIZED WITH VOLUME TO CONTAIN THE NECESSARY LIQUID. IN THE EVENT THE SAFETY VALVES RELIEVE, A SAFETY CRITICAL INSTRUMENT, ER-L0752, HAS BEEN INSTALLED TO ALLOW SUFFICIENT VESSEL OUTAGE TO CONTAIN THIS LIQUID. IN THE EVENT OF A PSV RELIEF, VESSEL LEVEL MUST BE MAINTAINED BELOW THIS LEVEL AT ALL TIMES.
6. PSV SET POINT TO BE BELOW CRITICAL PRESSURE TO AVOID NEED FOR AN EMERGENCY DEPRESSURING VALVE.
7. CHECK VALVES ARE SAFETY CRITICAL - MINIMIZES BACKFLOW OF CEMENT DRUM MATERIAL TO VARIOUS SOURCES. DIFFERENT TYPE CHAECK VALVES TO BE INSTALLED.
8. PIPING LAYOUT TO BE SYMMETRICAL.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
10. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
11. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
12. EBV LOCAL PANEL LOCATED MINIMUM 12m AWAY FROM THE SOURCE OF LEAK.
13. PROVIDE 2" INSPECTION PORTS. NUMBER AND LOCATION FOR PORTS TO BE DECIDED IN EPC 3D MODEL REVIEW.
14. DELETED.
15. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
16. PRV DISCHARGE LINE PIPE CONNECTION TO CEMENT BLOWDOWN DRUM HEADER SHALL BE DONE AT 45ºC IN THE HEADER FLOW DIRECTION.
17. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.

MULL

HOLDS:

1. DELETED.
3. DELETED.
70. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
CEMENT BLOWDOWN DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2291	1 OF 1	1

ER-E-30

Service: CEMENT BLOWDOWN DRUM HEATER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 320 kW (1)
Surface Area: 39 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 30.0 barg / -1.0 barg x 210.0 C /0°C
Tube Design Pressure (Max / Min) @ Temperature.: 23.1 barg / x 315.0 C /0°C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): VT-ER1383-3CB2S01-HC /-
Insulation (type/thickness): HC / 25.0 mm (CHANEL: 35 mm)

6703 WF EZ-K-2910 — 6"-WF-ER1186-1CB4S01 — 1 mm : 500.0 mm SLOPE — NOTE 10 — NOTE 9 — CSO — 6"x4" SCD — CL300 — MIN — 1" — 3/4" — NOTE 9 — CSO FP

SET AT 12.5 barg SIZE 3"J4" — PR358

3370 CWS EU-K-2850 — 3"-CWS-EU1079-12CS1S01

3332 MS EU-K-2835 — 3"-MS-EU1043-3CB1S02-HC — 3"x2" — 2" — T0352 V — 3"x2" FO — 3/4" — NOTE 3 — CL300 — 3" NC

P0366 T — P0366 T — T0352 — P0369 T — F0363 T — T0352 T — T0352 E — P0369 T — F0363 T — F0363 E — FREE DRAINING

4"-P-ER1185-AA1E-HC — TL-100.0 C

6"-P-ER1297-AA1E-HC — TL-100.0 C — RTD — 2" — 3/4" — 1/2" — 1/2" — FREE DRAINING

AA1E — AA1E 3CB2S01 — CSO — 3/4"

6"-P-ER1269-3CB2S01-HC — TL-100.0 C — 6" — 2"

6"-P-ER1184-AA1E-HC — TL-100.0 C — RS — 3" — N1 CL300 — HC — CL300 N2 — CL300 N3 — N4 CL300 — V CL300 D — ER-E-30 — 2"

3" — RS — 6" — 2" — 4"x3" — T1002 G — MIN — T1153 W

NOTE 10 — 4"-MC-ER1145-3CB1S02-HC — 3333 MC EU-K-2835 — 3CB1S02 AA1B — NC — PCSRS — SP ER-0022 — SP ER-0054 — ST — 4"x3" — 3/4" — 3"

CL300 — NOTE 3 — 3/4"

3369 CWR EU-K-2850 — 3"-CWR-ER1348-12CS1S01 — NC — NOTE 6 — 3/4"

6"-P-ER1192-3CB2S01-HC — TL-100.0 C

SC/ER-0004 — SC C — MIN — 3/4" — AA1E 3CB2S01 — MIN — 3/4" — NOTE 5

CEMENT ER-K-2291 3978 TO ER-D-30 CEMENT BLOWDOWN DRUM — 6"-P-ER1183-3CB2S01-HC — NOTE 5 — TL-100.0 C — 6"x4" — F0351 V — 6"x4" FO — 3/4" — F0351 — F0351 T — NC — 1/2" — 1/2" — F0351 E — 3/4"

ISOHEXANE 3979 ER-K-2291 FROM ISOHEXANE PUMPS — 1-1/2"-IHE-ER1172-3CB2S01 — 3/4" — TL-100.0 C

WASTE CEMENT 3980 ER-K-2291 FROM ER-D-30 CEMENT BLOWDOWN DRUM — 8"-P-ER1169-3CB2S01-HC — NOTE 5 — TL-100.0 C

P1157 G — 3/4" — TL-100.0 C — STOP — M0017 SS3 — H — R55 — M0017 — 3/4"-SB-ER1331-3CB2S01

SP ER-0021 — 6"x6" — RF — CL300 — ER-PM-30 — NOTE 8 — RF — CL300 — 2"x3/4" — 3/4"-O-ER1387-12CS1S01 — ER-P-30 — GRADE — O

2" 3/4" — NC — 3CB2S01 AA1E — (2) SB-ER1309-AA1E — 3278 SB EZ-K-2950

6"-P-ER1367-AA1E-HC — TL-100.0 C — 6"-P-ER1027-AA1E-HC — TL-100.0 C — MIN

AA1E — 3CB2S01 — 6"-P-ER1187-3CB2S01-HC — NOTE 5 — TL-100.0 C — (1) TO ER-FIL-01A SOLVENT DRYER INLET FILTER — HEXANE FLUSH TO ER-D-01A/B RECYCLE SOLVENT DRYERS — 4107 P ER-K-2246

3"-P-ER1263-3CB2S01-HC — NOTE 5 — TL-100.0 C — 4091 P ER-K-2245A

AA1E — FA1 — NOTE 1 — NOTE 2 — SCD-CHK-030 — NOTE 2 — SCD-CHK-031 — 6"-P-ER1192-FA1-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO EL-D-01 HIGH PRESSURE SEPARATOR — 3285 P EL-K-2310

AA1E — 3CB2S01 — 4"-P-ER1193-3CB2S01-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ED-D-01 LOW PRESSURE SEPARATOR — 2834 P ED-K-2610

3"-P-ER1336-AA1E-HC — TL-100.0 C — SLOP 3281 EZ-K-2950 — TO EZ-D-50 MIXED OIL DRUM

2"-P-ER1335-AA1E-HC — TL-100.0 C — HEXANE 3487 ET-K-2410 — TO ET-T-10 ISOHEXANE PURIFICATION TOWER

AA1E — 3CB2S01 — 3"-P-ER1250-3CB2S01-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ED-D-01 LOW PRESSURE SEPARATOR — 2836 P ED-K-2610

AA1E — 3CA2S85 — 3"-P-ER1272-3CA2S85-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ED-P-03A/B (1) WASH TOWER SOLVENT FILTER — 4122 P ED-K-2680A

3"-P-ER1339-3CA2S85-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ED-P-03A/B WASH TOWER SOLVENT PUMPS — 4182 P ED-K-2680

3"-P-ER1273-3CA2S85-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ED-FIL-03B (1) WASH TOWER SOLVENT FILTER — 2912 P ED-K-2680A

AA1E — 3CB2S01 — 3"-P-ER1190-3CB2S01-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ER-D-30 CEMENT BLOWDOWN DRUM — 3977 P ER-K-2291

3"-P-ER1191-15CB1S87-HC — NOTE 5 — TL-100.0 C — NOTE 2 — SCD-CHK-032 — NOTE 2 — SCD-CHK-033 — HEXANE FLUSH TO EL-E-01/11/02 HPS FEED/LEAN PHASE EXCHANGER 1, 2 HPS FEED STEAM HEATER — 3136 P EL-K-2300

AA1E — 15CB1S87 — 3"-P-ER1246-15CB1S87-HC — NOTE 5 — TL-100.0 C — NOTE 2 — SCD-CHK-034 — NOTE 2 — SCD-CHK-035 — HEXANE FLUSH TO ER-D-12 QUENCH MIXER — 4018 P ER-K-2280

6"x4"

AA1E — 15CB1S87 — 4"-P-ER1189-15CB1S87-HC — NOTE 5 — TL-100.0 C — NOTE 2 — SCD-CHK-036 — NOTE 2 — SCD-CHK-037 — (1) HEXANE FLUSH TO ER-R-10 R1 POLYMERIZATION REACTOR — 4121 P ER-K-2261

4"-P-ER1188-15CB1S87-HC — NOTE 5 — TL-100.0 C — HEXANE FLUSH TO ER-R-20 R2 POLYMERIZATION REACTOR — 4029 P ER-K-2271

ER-P-30

Service: CEMENT BLOWDOWN PUMP
Type: Horizontal centrifugal pump
Capacity: 123.0 m^3/hr
Differential Press.: 2.6 bar
Material of Construction: CS

NOTES:

1. VALVES ASSOCIATED WITH HEXANE FLUSH MANIFOLD SHALL BE ACCESSIBLE.
2. CHECK VALVES ARE SAFETY CRITICAL AS CREDIT IS TAKEN FOR LIFTING RELIEF LOAD FOR ER-PR-358, PROVIDE SIGN ON CHECK VALVES. DIFFERENT TYPE CHECK VALVES TO BE INSTALLED.
3. COOLING WATER CONNECTIONS FOR ALTERNATE USE OF ER-E-30 AS A COOLER. PROVIDE SPOOL PIECE. REMOVABLE SPOOL PIECE TO CONNECT STEAM SUPPY/RETURN OR COOLING WATER SUPPLY/RETURN AT A GIVEN TIME.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
5. MILD TRACING: NOT TO EXCEED 100°C.
6. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
7. DELETED.
8. MOTOR WITH START/STOP LOCAL PUSH BOTTON.
9. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL
10. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. (1)

HOLDS:

1. DELETED.
2. DELETED.
4. DELETED.
53. DELETED. (1)

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Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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al jubail petrochemical co.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

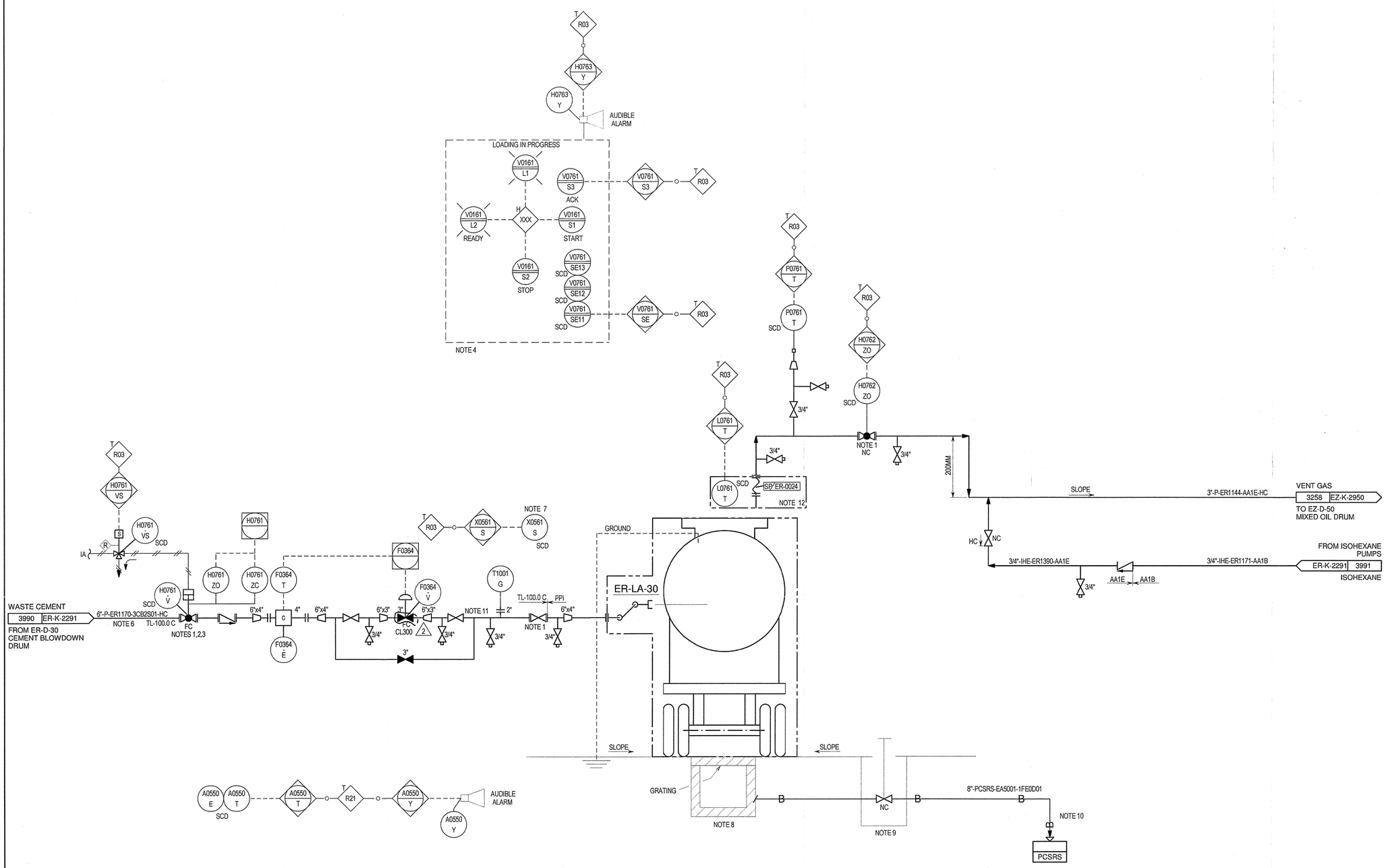
TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
HEXANE FLUSH SUPPLY HEADER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2292	1 OF 1	1

ER-LA-30
Service: CEMENT BLOWDOWN LOADING ARM

TANK TRUCK
TRUCK CLASS-MC407
OR EQUIVALENT



NOTES:

1. LOCATE ON TRUCK LOADING PLATFORM.
2. ROV TO CLOSE ON HIGH TRUCK LEVEL HIGH TRUCK PRESSURE OR IF TRUCK VENT VALVE IS CLOSED. ALSO TO HAVE A PRESSURE TO OPEN TO LOAD TRUCK ONLY IF THE BLOCK VALVE ON THE TRUCK VENT IS OPEN.
3. ROV TO CLOSE ON HIGH ER-D-30 PRESSURE.
4. LOCAL OPERATION BOARD FOR LOADING.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH ER UNLESS OTHERWISE STATED.
6. MILD TRACING: NOT TO EXCEED 100°C.
7. TRUCK GROUNDING IS PERMISSIVE TO START LOADING AND SHUTDOWN UPON LOSS OF GROUNDING.
8. PIT TO ACCOMODATE FULL VOLUME OF ONE TANK TRUCK. HEAVY GRATING FOR TANK TRUCK PARKING DURING LOADING.
9. VALVE BOX SHOULD BE FITTED WITH CHECKERED PLATE COVER AND SILLS.
10. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWINGS.
11. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
12. ERL0761T AND SP/ER-0024 WITHIN ER-LA-30 VENDRO SCOPE.

HOLDS:

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

kemya — al jubail petrochemical co.

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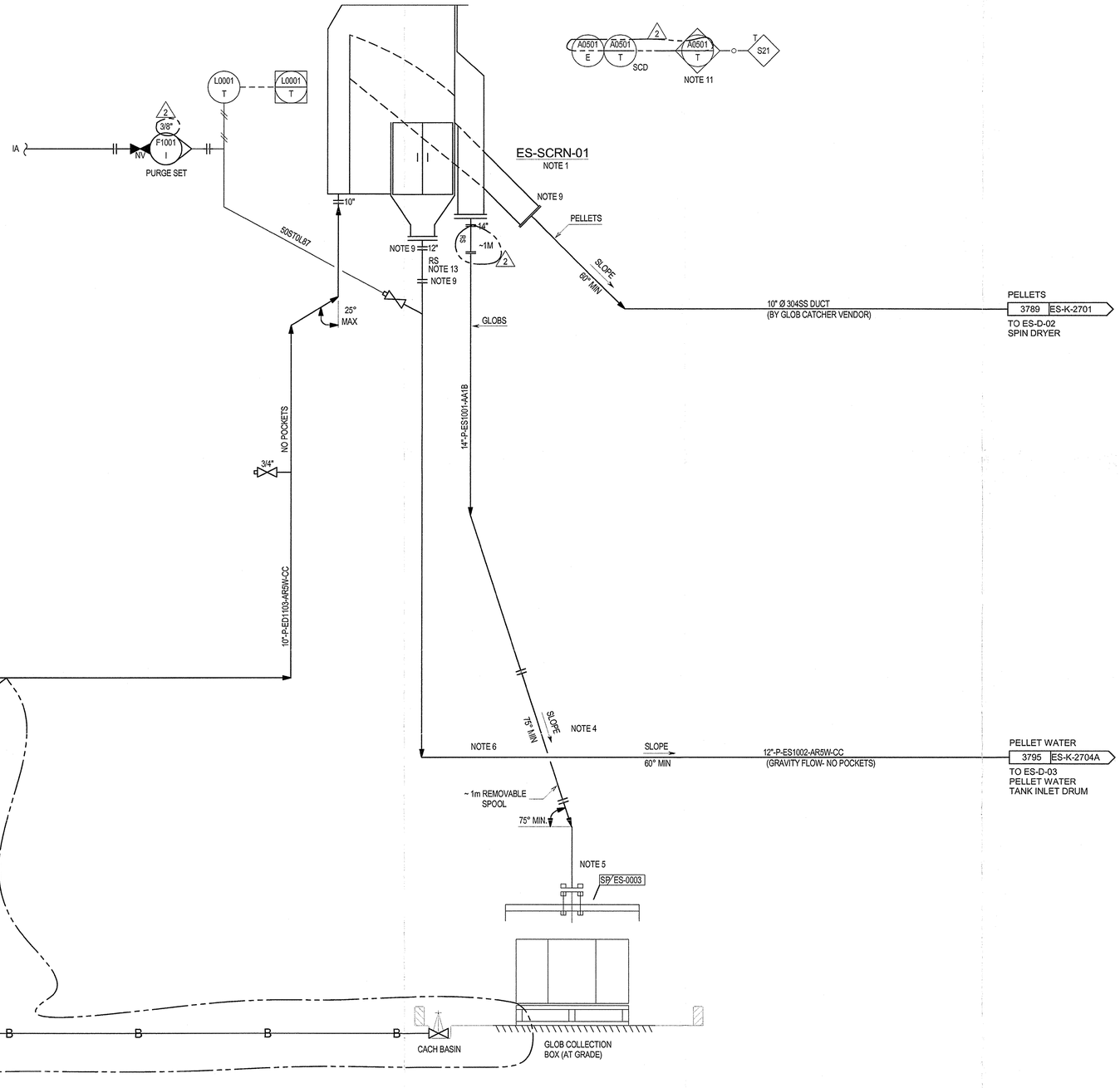
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FEED AND REACTORS
CEMENT TO TANK TRUCK LOADING

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ER-K-2293	1 OF 1	2

ES-SCRN-01
Service: GLOB CATCHER
CAP.: 458 m^3/h WATER & 18500 kg/h POLYMER PELLETS



NOTES:

1. 1000 mm (MINIMUM) PROVIDED FOR ACCESS BETWEEN GLOB CATCHER AND SPIN DRYER.
2. NOT USED.
3. DELETED. 2
4. USE 10D ELBOWS.
5. MAKE LINE VERTICAL IF POSSIBLE.
6. BRACE LINE FOR TWO PHASE SLUG FLOW.
7. NOT USED.
8. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
9. VICTAULIC COUPLING.
10. DELETED.
11. PRIORITY 1 ALARM. HYDROCARBON GAS DETECTION FOR GLOB CATCHER.
12. DELETED. 2
13. LENGTH TO BE APPROX. 600 mm.
14. DELETED. 2

HOLDS:

54.DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DBF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

al jubail petrochemical co.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
GLOB CATCHER

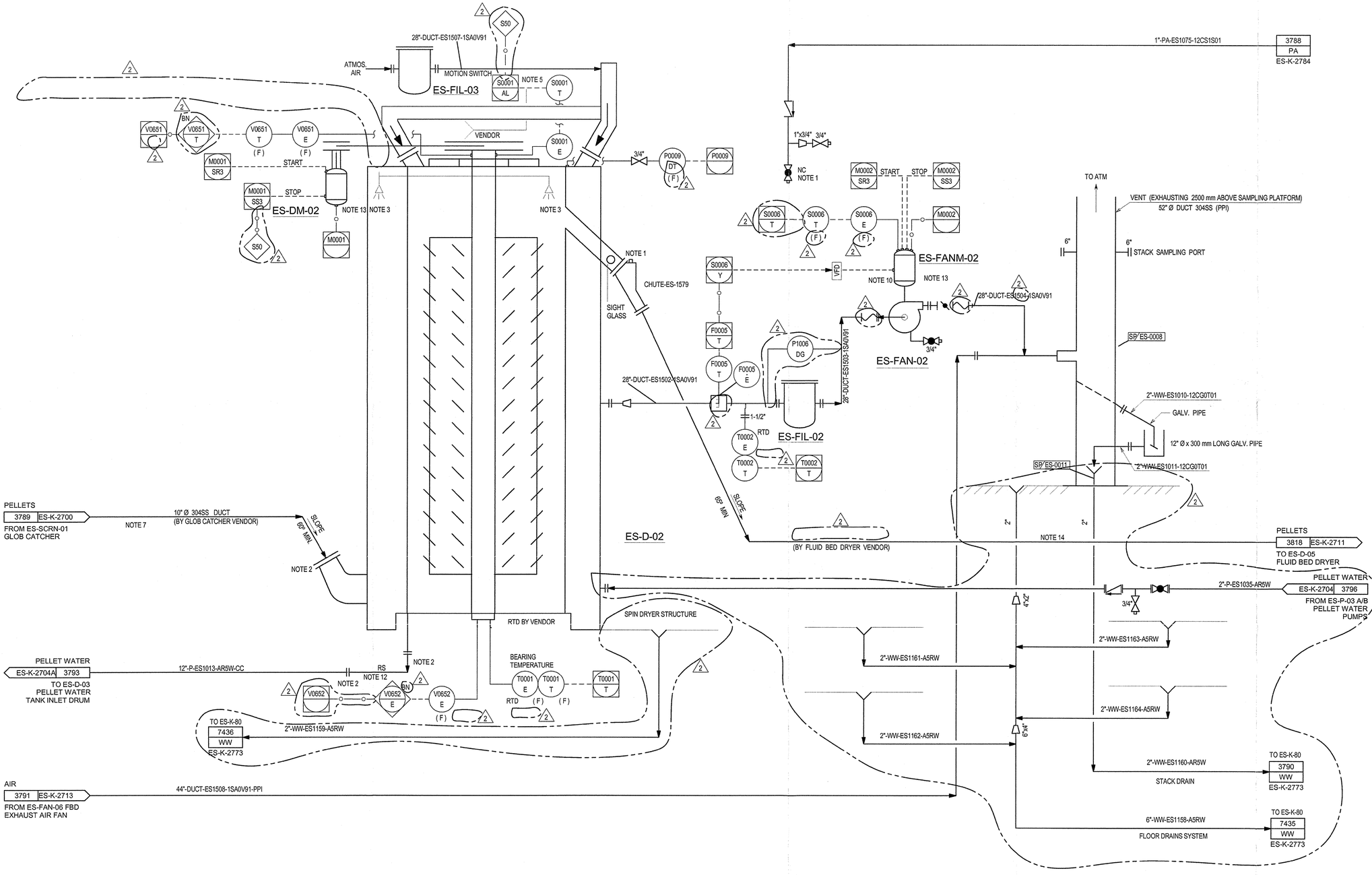
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2700	1 OF 1	2

ES-D-02
Service: SPIN DRYER
Type: Spin Dryer
Dimension (Height): 5300.0 mm
Design Pressure (Max / Min) @ Temperature: 0.0 barg / 0.0 barg x 90.0 C
Materials of Construction: 304 S.S.
Trim :
Insulation (type/thickness): /

ES-FIL-03
Service: SPIN DRYER INLET AIR FILTER
Type: Filter
Capacity: 21979.0 m^3/hr (21100 Sm3/h)
Design Pressure (Max / Min) @ Temperature: 0.1 barg / -0.1 barg x 90.0 C
Differential Pressure: 0.0 bar (-6.5 mbar)
Material of Construction: 304 S.S.
TRIM:

ES-FIL-02
Service: SPIN DRYER EXHAUST FILTER
Type: Filter
Capacity: 20811.0 m^3/hr (21954 Sm3/h) (SATURATED AIR)
Design Pressure (Max / Min) @ Temperature: 0.1 barg / -0.1 barg x 90.0 C
Differential Pressure: 0.0 bar (-4 mbar)
Material of Construction: 304 S.S.
TRIM:



ES-FAN-02
Service: SPIN DRYER EXHAUST FAN
Capacity: 20811.0 nm^3/hr (21954 m3/h) (SATURATED AIR)
Differential Press: 0.1 bar (0.063 bar)
Power Requirements: 75 kW
Material of Construction: 304 S.S.

NOTES:

1. PLANT AIR PROVIDED FOR SPARGER, TO BE DESIGNED AND INSTALLED IF OPERATING EXPERIENCE INDICATES TO BE NECESSARY TO MINIMIZE SPIN DRYER OUTLET NOZZLE PLUGGING. CHUTE INCLUDES TWO 1/2" PLUGGED CONNECTIONS FOR SPARGER INSERTION.
2. VICTAULIC COUPLING.
3. SPRAY RING TO WASH FINES FROM THE SCREENS OF SPIN DRYER.
4. TRAP KEY SISTEM TO SHUTDOWN SPIN DRYER AND DEVO. SYSTEM THAT ARE LINED UP TO THIS SPIN DRYER IF SPIN DRYER DOORS NOT CLOSED.
5. MOTION SWITCH BY DRYER VENDOR.
6. DELETED.
7. DUCT BETWEEN GLOBE CATCHER ES-SCRN-01 AND SPIN DRYER ES-D-02 TO BE EASILY REMOVABLE FOR CLEAN-OUT.
8. DELETED.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
10. VFD MOTOR.
11. DELETED.
12. LENGTH TO BE APPROX. 600 mm.
13. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
14. DRAGON-ELITE-1 INTERNAL COATING.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
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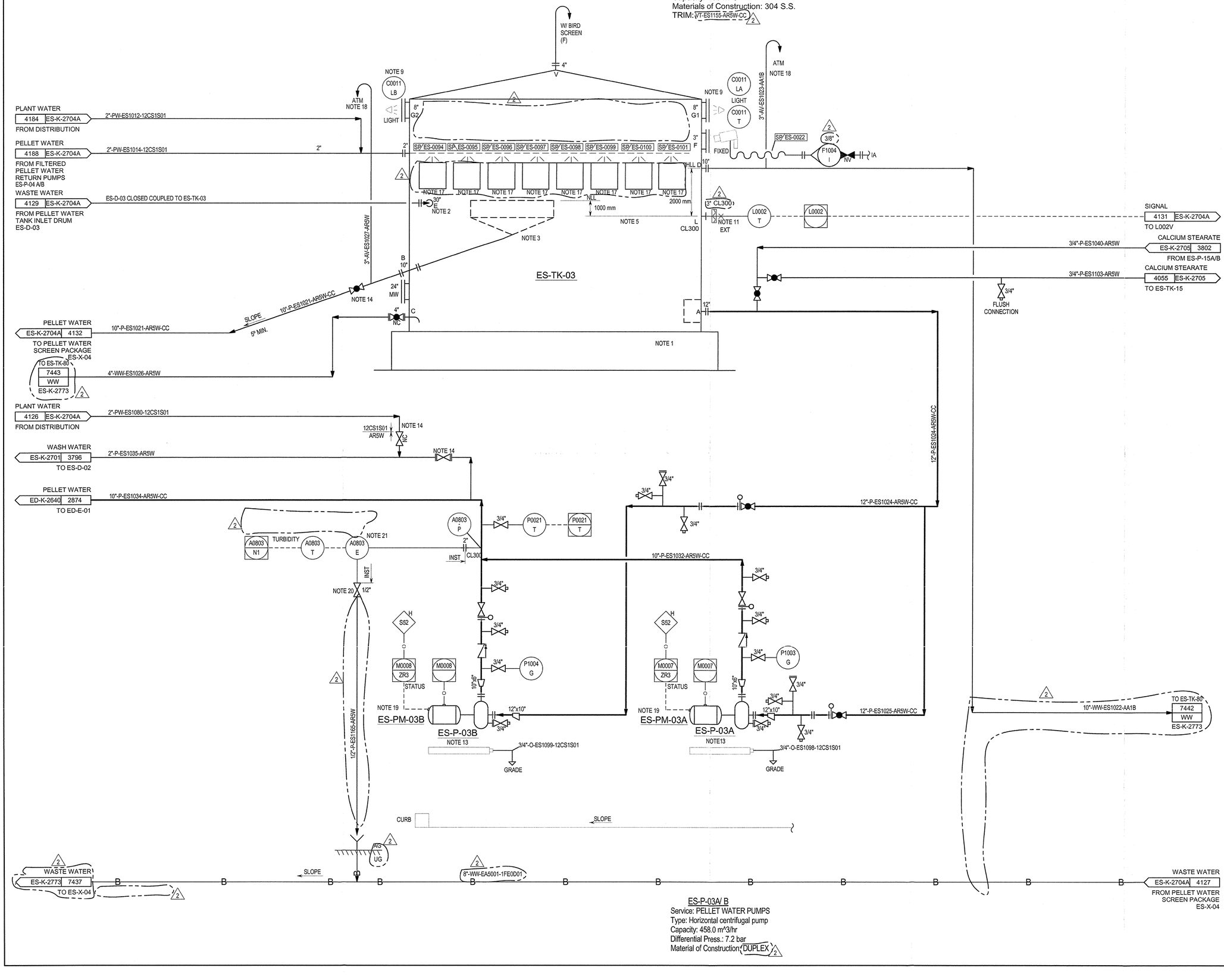
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
SPIN DRYER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2701	1 OF 1	2



ES-P-03A/ B
Service: PELLET WATER PUMPS
Type: Horizontal centrifugal pump
Capacity: 458.0 m^3/hr
Differential Press.: 7.2 bar
Material of Construction: DUPLEX 2

NOTES:

1. THE TANK IS INSTALLED ON ELEVATED CONCRETE PAD. THE CONCRETE PAD IS TO HAVE NOMINAL 25 mm DEEP X 50 mm WIDE GROVES.
2. TANGENTIAL NOZZLE.
3. LOCATE FINES OVERFLOW COLLECTOR IN CENTER AND ALLOW FOR 30mm TO 50mm HEIGHT AT THE 55m^3/h OVERFLOW RATE.
4. DELETED.
5. PROVIDE ENOUGH VOLUME IN THE TANK BETWEEN NLL AND HLL TO PREVENT TANK OVERFLOW TO SEWER WHEN THE PELLET WATER PUMP IS STOPPED.
6. DELETED.
7. NOT USED.
8. DELETED.
9. CAMERA AND LIGHT TO WATCH OVERFLOW COLLECTOR.
10. NOT USED
11. EXTENDED DIAPHRAGM.
12. NOT USED.
13. ES-P-03A/B TO BE LOCATED IN COMMON CURVED AREA.
14. VALVE TO BE ACCESSIBLE.
15. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
16. DELETED.
17. WINDOW Ø 800 mm. 2
18. ATMOSPHERIC VENT WITH BIRD SCREEN.
19. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
20. THREADED END VALVE.
21. ANALYZER LOCATED IN RACK EZ-AX-06. SEE DETAIL IN P&ID EZ-K-2955A.

HOLDS:

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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PELLET WATER TANK

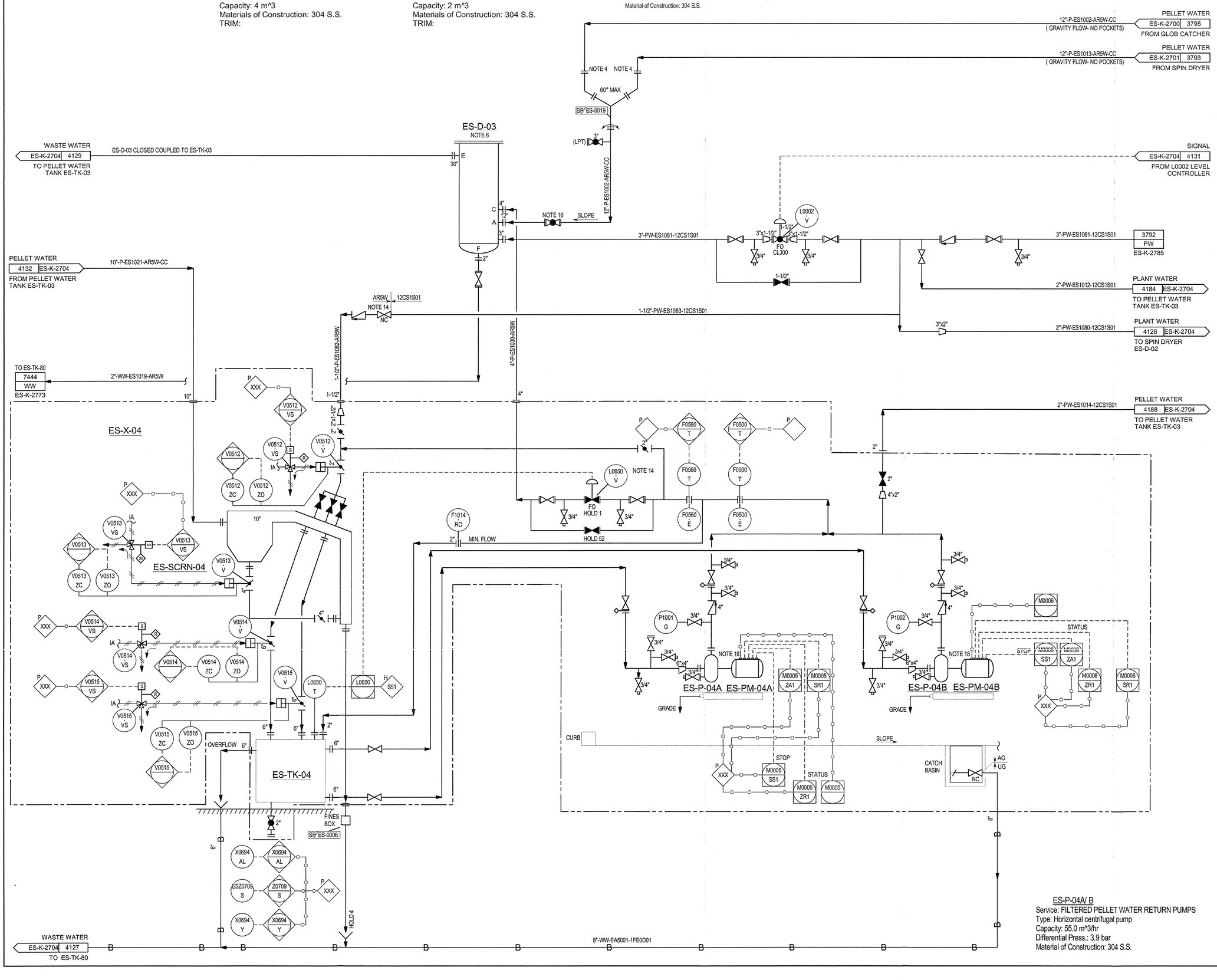
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2704	1 OF 1	2

ES-TK-04
Service: PELLET WATER FILTRATE TANK
Dimension.: 1840.0 mm x 1500.0 mm x 1400.0 mm
Capacity: 4 m^3
Materials of Construction: 304 S.S.
TRIM:

ES-D-03
Service: PELLET WATER TANK INLET DRUM
Dimension.: 743.0 mm x 3500.0 mm
Capacity: 2 m^3
Materials of Construction: 304 S.S.
TRIM:

ES-SCRN-04
Service: PELLET WATER SCREEN
Capacity: 55.0m^3/hr (WATER & POLYMER FINES 300 micron)
Material of Construction: 304 S.S.

ES-X-04
Service: PELLET WATER SCREEN PACKAGE



ES-P-04A/ B
Service: FILTERED PELLET WATER RETURN PUMPS
Type: Horizontal centrifugal pump
Capacity: 55.0 m^3/hr
Differential Press.: 3.9 bar
Material of Construction: 304 S.S.

NOTES:

1. DELETED.
2. DELETED.
3. DELETED.
4. REMOVABLE SPOOL PIECE TO BE ACCESSIBLE.
5. DELETED.
6. TROUGH WITH REMOVABLE TOP. PROVIDED WITH ES-D-03. 30"X30" CHANNEL.
7. NOT USED.
8. PROVIDE DISTRIBUTION OF FEED AT INLET TO HYDROSIEVE.
9. DELETED.
10. NOT USED
11. DELETED.
12. NOT USED.
13. DELETED.
14. VALVE TO BE ACCESSIBLE.
15. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
16. TO BE INSTALLED AT HORIZONTAL PORTION.
17. DELETED.
18. MOTOR WITH SATR/STOP LOCAL PUSH BUTTON.

HOLDS:

1. CONTROL VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
52. BYPASS SIZE TO BE CONFIRMED WITH FINAL CONTROL VALVE SIZE.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PELLET WATER SCREEN PACKAGE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2704A	1 OF 1	2

ES-MA-16
Service: CALCIUM STEARATE TOTE AGITATOR
Materials of Construction: 304 S.S.
Power Requirements: 0 kW (0.4 kW) (AIR)

ES-MA-15
Service: CALCIUM STEARATE TANK AGITATOR
Materials of Construction: 304 S.S.
Power Requirements: 6 kW NOTE 5

ES-TK-15
Service: CALCIUM STEARATE TANK
Dimension.: 2150.0 mm x 2150.0 mm
Capacity: 8 m^3
Materials of Construction: 304 S.S.
TRIM: VT-ES1156-AR5W 2

ES-FIL HOLD 48
Service:
Type: Filter
Capacity:
Design Pressure (Max / Min) @ Temperature: / x
Differential Pressure:
Material of Construction:
TRIM: 2

P1123 G
P1023 CV
1"x1/2"
1"x1/2"
3/4"
HOLD 48
CL300
SP/ES-0030
SP/ES-0033
3/4"
1"-IA-ES1133-12CG0T02
7183
IA
ES-K-2783
BY VENDOR
ES-MA-16 A
NOTE 4
SP/ES-0091
NC
1/2"-PW-ES1084-12CS1S01
CALCIUM STEARATE TOTE
(VENDOR SUPPLIED)
NOTE 1
NC
SP/ES-0031
NC
NOTE 3
2"-PW-ES1062-12CS1S01
3/4"
3/4"
NOTE 3
4054
PW
ES-K-2785
3/4"-P-ES1040-AR5W
CALCIUM STEARATE
3802 ES-K-2704
TO ES-P-03A/B
SUCTION
3/4"
3/4"-P-ES1103-AR5W
CALCIUM STEARATE
ES-K-2704 4055
3/4"-P-ES1041-AR5W
3/4"-IG-ES1060-AA1C
4058
IG
ES-K-2782
3/4"
3/4"
F1015
RO
1"-3/4"
L0005
T
F1007
1"
RADAR
L0005
T
2"
M0009
ES-MAM-15
ES-MA-15
NOTE 5
24"
MW
4"
2"
C
H
CL300
B
A
I
E
D
2"-P-ES1037-AR5W
GRAVITY FLOW
DO NOT PONCKET
2"-3/4"
2"-3/4"
2"-AV-ES1102-AR5W
TO SAFE LOCATION
NOTE 13
2"
2"
2"
F0030
F0030
T
NOTE 2
C
MASS
F0030
E
3/4"
3/4"
3/4"-P-ES1039-AR5W
FP
MIN.
3/4"
P1005
G
3/4"
1"-P-ES1038-AR5W
FREE DRAINING
3/4"-P-ES1043-AR5W
SP
S0003
Y
SP
S0004
Y
FP
MIN.
3/4"
P1006
G
3/4"
FREE DRAINING
MIN.
SP/ES-0034
MIN.
3/4"
3/4"
2"x1"
1"-P-ES1066-AR5W
MIN
MIN.
3/4"
2"
F
J
G
2"
2"
2"
MIN
MIN.
NOTE 7
3/4"
PR012
SCD
FP
SIZE: 3/4"
SET AT 9.7 bar
NOTE 9
2
NOTE 7
3/4"
PR013
SCD
FP
SIZE: 3/4"
SET AT 9.7 bar
NOTE 9
2
VFD
VFD
HOLD 4
HOLD 4
HOLD 4
HOLD 4
NOTE 14
ES-PM-15A
NOTE 14
ES-PM-15B
NOTE 6
NOTE 6
M0010
M0011
NOTE 11
NOTE 11
ES-P-15A
ES-P-15B
STOP
M0010
SS3
STOP
M0011
SS3
STATUS
M0010
ZR3
H
S52
STATUS
M0011
ZR3
H
S52
ES-TK-15
CURB
SLOPE
SLOPE
CURB
CATCH
BASIN
2
WASTE WATER
ES-K-2773 7447
TO ES-TK-80
8"-WW-ES1157-1FE0D01
IN COVERED TRENCH

ES-P-15A/ B
Service: CALCIUM STEARATE PUMPS
Type: Screw pump
Capacity: 0.1 m^3/hr
Differential Press.: 2.4 bar
Material of Construction: 304 S.S.

NOTES:

1. CALCIUM STEARATE TOTES ARE ELEVATED ON THE STRUCTURE LEVEL ABOVE ES-TK-15 TO ALLOW GRAVITY DRAIN FROM TOTE.
2. MOUNT CORIOLIS METER TO MINIMIZE SOLID PLUGGING.
3. PLANT WATER IS USED TO FLUSH CALCIUM STEARATE TOTES.
4. PORTABLE TOTE AGITATOR IS TO FIT THROUGH BUNG A TOP THE TOTE.
5. ANCHOR TYPE IMPELLER TO MINIMIZE FOAMING WHILE KEEPING SOLIDS IN SUSPENSION.
6. DCS TO SHUTDOWN CALCIUM STEARATE PUMPS IF PELLET WATER PUMPS GO DOWN.
7. RUPTURE DISK TO COME OFF TOP OF PIPE TO PREVENT SETTING OF SOLID IN INLET LINE.
8. NOT USED.
9. RUPTURE DISC TO BE SET AT THE MAXIMUM ALLOWABLE DISCHARGE PRESSURE OF ES-P-15A/B UP TO 10 barg MAXIMUM.
10. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
11. VFD MOTOR.
12. DELETED.
13. ATMOSPHERIC VENT WITH BIRD SCREEN.
14. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
48. TAG NUMBER TO BE DEFINED LATER. 2
64. DELETED.
65. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
CALCIUM STEARATE SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

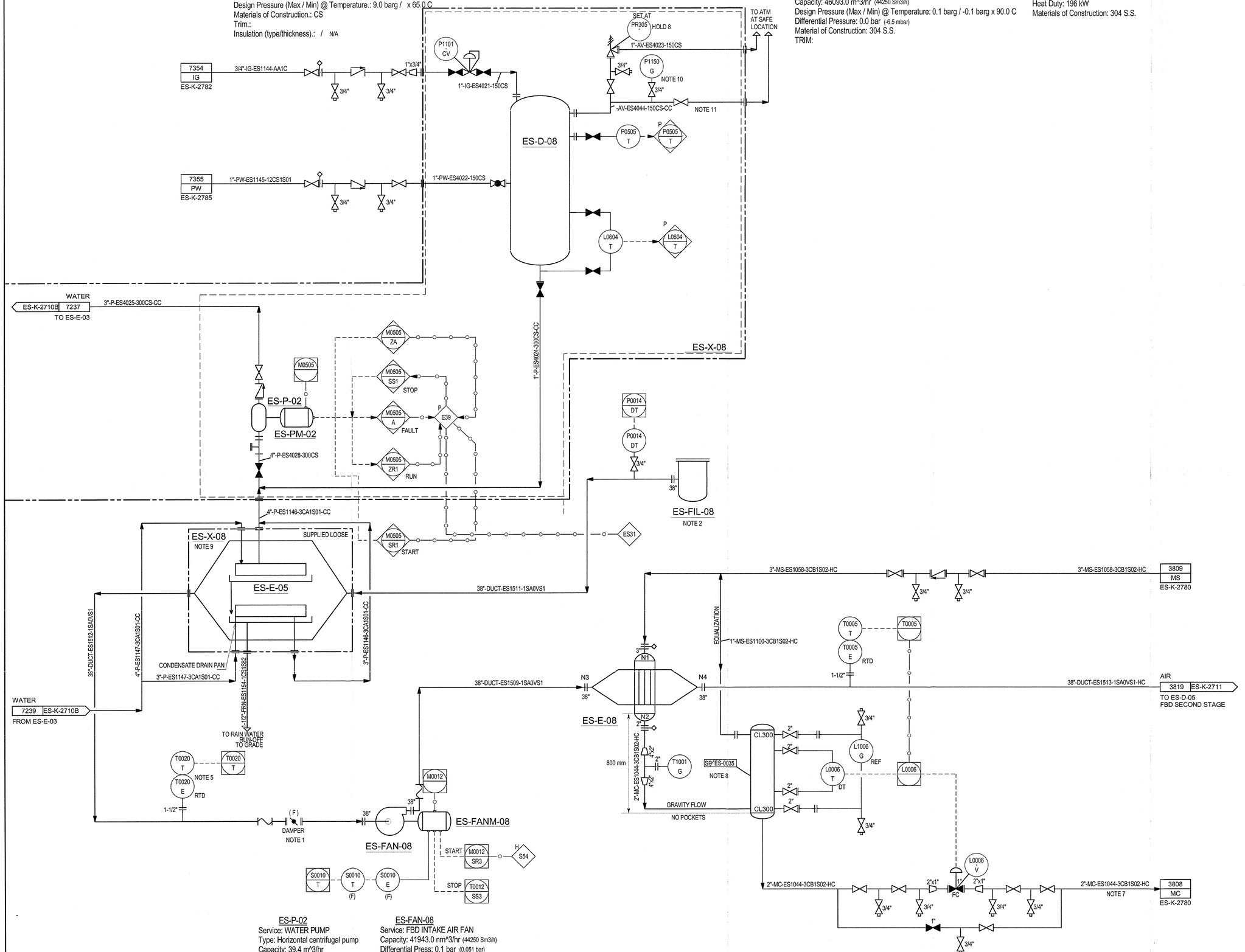
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2705	1 OF 1	2

ES-X-08
Service: FBD INLET AIR CHILLER PACKAGE
NOTE 3

ES-D-08
Service.: EXPANSION DRUM
Dimension.: 500.0 mm x 2000.0 mm
Design Pressure (Max / Min) @ Temperature.: 9.0 barg / x 65.0 C
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / N/A

ES-FIL-08
Service: FBD INTAKE AIR FILTER
Type: Filter
Capacity: 46093.0 m^3/hr (44250 Sm3/h)
Design Pressure (Max / Min) @ Temperature: 0.1 barg / -0.1 barg x 90.0 C
Differential Pressure: 0.0 bar (-6.5 mbar)
Material of Construction: 304 S.S.
TRIM:

ES-E-08
Service: FBD INTAKE AIR HEATER
Type: Air Heater
Heat Duty: 196 kW
Materials of Construction: 304 S.S.



ES-P-02
Service: WATER PUMP
Type: Horizontal centrifugal pump
Capacity: 39.4 m^3/hr
Differential Press.: 1.3 bar
Material of Construction: CAST IRON
POWER REQUIREMENTS: 3 kW

ES-FAN-08
Service: FBD INTAKE AIR FAN
Capacity: 41943.0 nm^3/hr (44250 Sm3/h)
Differential Press: 0.1 bar (0.051 bar)
Power Requirements: 90 kW
Material of Construction: 304 S.S.

NOTES:

1. FOR FLOW BALANCING AT START-UP.
2. MUST BE ABLE TO CHANGE ELEMENTS WHILE OPERATING.
3. AIR SIDE TO BE 304SS. NON-AIR SIDE TO BE ADVISED BY VENDOR.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
7. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
8. SP/ES-0035 DIMENSIONS: 4" DIAMETER x 2440 mm LENGTH.
9. AIR CHILLER PACKAGE SKIDS TO BE LOCATED AS CLOSED AS POSSIBLE BETWEEN THEM.
10. PG TO BE READABLE FROM BYPASS VALVE.
11. 3/4" WHEPHOLE ADD DRAIN LINE TO SAFE LOCATION IF REQUIRED.

HOLDS:

1. DELETED.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.
19. DELETED.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
1	23/07/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
FLUID BED DRYER INTAKE AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2710	1 OF 1	2

ES-C-01
Service: COMPRESSOR
Type: Screw compressor
Capacity: 1464.0 nm^3/hr
Pressure Suction/Discharge: 2.3 barg / 16.3 barg
Number of Stages: SINGLE
Material of Construction: CAST IRON
Power Requirements: 388 kW

ES-FIL-02A / B
Service: OIL FILTER
Type: Filter
Capacity: 5.7 m^3/hr
Design Pressure (Max / Min) @ Temperature 24.0 barg / -1.0 barg x 90.0 C (0 C)
Differential Pressure: -1.0 bar
Material of Construction: CS
TRIM:

ES-D-07
Service.: OIL SEPARATOR
Dimension.: 900.0 mm x 4000.0 mm
Design Pressure (Max / Min) @ Temperature.: 20.0 barg / -1.0 barg x 90.0 C (0 C)
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: PPS /

NOTES:

1. FROM MCC TO PLC.
2. AIR CHILLER PACKAGE SKIDS TO BE LLOCATED AS CLOSED AS POSSIBLE BETWEEN THEM.
3. POSITIVE DISPLACEMENT PUMP WITH INTERNAL RELIEF VALVE.
4. PG TO BE READABLE FROM BYPASS VALVE.
5. 3/4" WHEPHOLE ADD DRAIN LINE TO SAFE LOCATION IF REQUIRED.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
8. BY VENDOR.

ES-P-01A / B
Service: OIL PUMP
Type: Positive displacement pump
Capacity: 9.2 m^3/hr
Differential Press.: 2.5 bar
Material of Construction: CAST IRON

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
0	23/07/2013	ISSUED FOR CONSCTRUCION	MCG	DRS	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
ES-X-08 EPDM
INLET AIRCHILLER PACKAGE 1/2

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2710A	1 OF 1	1

ES-E-01

Service: Oil Cooler
Design Pressure @ Temperature: 24.0 barg/-1.0barg@105C x 0C
Heat Duty: 132 kW
Surface Area: 1030 m2
Motor Power: 37 KW
Materials of Construction:CS
Trim:
Insulation (Type/Thickness): / N/A

ES-E-02

Service: Condenser
Design Pressure @ Temperature: 20.0 barg/-1.0barg x 90.0C (26°C) (1)
Heat Duty: 1352 kW
Surface Area:7806 m2
Motor Power:37 KW
Materials of Construction: CS
Trim:
Insulation (Type/Thickness): / N/A

ES-FIL-01

Service: FILTER DRYER
Type: Filter
Capacity: 23.9 m^3/hr
Design Pressure (Max / Min) @ Temperature: 20.0 barg / -1.0 barg x 90.0 C (-26 C)
Differential Pressure: 0.2 bar
Material of Construction: CS
TRIM:

ES-D-01

Service.: LIQUID RECEIVER
Dimension.: 1000.0 mm x 5000.0 mm
Design Pressure (Max / Min) @ Temperature.: 20.0 barg / -1.0 barg x 90.0 C (-26 C)
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / N/A

ES-D-04

Service.: FLASH ECONOMISER
Dimension.: 490.0 mm x 3000.0 mm
Design Pressure (Max / Min) @ Temperature.: 20.0 barg / -1.0 barg x 90.0 C (-26 C)
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / 25.0 mm

ES-E-04

Service: OIL RETURN HEAT EXCHANGER
Type: Plate heat exchanger
Heat Duty: 2 kW
Materials of Construction: 316 S.S.
Desing Pressure (Max/Min) @ Temperature: 20 barg/-1.0 barg@ 90 C x -26.0 C

ES-D-06

Service.: SUCTION DRUM
Dimension.: 650.0 mm x 4500.0 mm
Design Pressure (Max / Min) @ Temperature.: (1) 16.0 barg / -1.0 barg x 90.0 C (-26 C)
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: / 50.0 mm

ES-E-03

Service: EVAPORATOR
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 1042 kW
Surface Area: 104 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 16.0 barg / -1.0 barg x 90.0 C (-26 C)
Tube Design Pressure (Max / Min) @ Temperature.: 9.0 barg / 0.0 barg x 90.0 C (0 C)
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes):
Insulation (type/thickness): / 50.0 mm

R134A VAPOUR
ES-K-2710A 7250
8"-FRN-ES4029-300CS-CC
TO ES-C-01

R134A VAPOUR
ES-K-2710A 7249
3"-FRN-ES4031-300CS-CC
TO ES-C-01

LUBE OIL
7247 ES-K-2710A
3"-LO-ES1148-3SA1S87-PPS
FROM ES-P-01A/B

LUBE OIL
ES-K-2710A 7246
3"-LO-ES1149-3SA1S87-PPS (1)
TO ES-FIL-02A/B

R134A VAPOUR
7248 ES-K-2710A
6"-FRN-ES1150-3CA1S01-PPS
FROM ES-D-07

SUPPLIED LOOSE
3"-LO-ES4047-300CS
3"-LO-ES4048-300CS-PPS
6"-FRN-ES4051-300CS-PPS
4"-FRN-ES4049-300CS
4"-FRN-ES1151-3CA1S01

ES-E-01
ES-E-02
ES-FAN-01A
ES-FAN-01B
ES-FANM-01A
ES-FANM-01B
V0510 S
M0510
M0503 SS1 START
M0503 SR1 STOP
M0503 A FAULT
M0503 ZR1 RUN
E36
H0506 S AUTO/OFF
V0511 S
M0511
M0504 SS1 START
M0504 SR1 STOP
M0504 A FAULT
M0504 ZR1 RUN
E37
H0507 S AUTO/OFF
ES31

SET AT 16.0 barg
PR301
TO ATM AT SAFE LOCATION
-SV-ES4061-150CS
8"-FRN-ES4059-300CS-CC
1"-FRN-ES4058-300CS-CC
3/4"
P G
NOTE 3
NOTE 4
ES-D-06
L0601 T
L0600 T
ES-E-03
L0600 V
L0600 T
H0522 ZO
H0522 ZC
H0522 VS
E38
H0522 V
FC
NV
T1003 G
T1004 G
WATER
7239 ES-K-2710
TO ES-E-05
4"-FRN-ES4027-300CS-CC
4"-FRN-ES1147-3CA1S01-CC
WATER
ES-K-2710 7237
FROM ES-P-02
3"-FRN-ES4025-300CS-CC
S1001G
S1002G

SET AT 20.0 barg
PR303
TO ATM AT SAFE LOCATION
-SV-ES4053-150CS
-FRN-ES4052-300CS
4"-FRN-ES4050-300CS
L1003 G
ES-D-01
NOTE 2
A0870 P
3"-FRN-ES1152-3CA1S01
CHARGING POINT NOTE 2
3"-FRN-ES1153-3CA1S01
ES-FIL-01
NOTE 2

SET AT 20.0 barg
PR304
TO ATM AT SAFE LOCATION
-SV-ES4056-150CS
-FRN-ES4055-300CS
P0504 V
P0504 T
ES-D-04
L0603 V
L0603 T
L0602 T
ES-E-04
3"-FRN-ES4057-300CS

NOTES:

1. AIR CHILLER PACKAGE SKIDS TO BE LOCATED AS CLOSED AS POSSIBLE BETWEEN THEM.
2. PROVIDED LOOSE BY VENDOR.
3. PG TO BE READABLE FROM BY PASS VALVE.
4. 3/4" WHEPHOLE ADD DRAIN LIVE TO SAFE LOCATION IF REQUIRED. (1)

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
INLET AIR CHILLER PACKAGE (2/2)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2710B	1 OF 1	1

ES-D-05

Service: FLUID BED DRYER (FBD)
Type: Fluidized bed dryer
Dimension (Height): 5610.0 mm ; Length: 9799mm ; Width: 1486 mm
Design Pressure (Max / Min) @ Temperature: 0.1 barg / -0.1 barg x 120.0 C / 0 °C (2nd stage)
Materials of Construction: 304L S.S. 2
Trim : 0.1 barg / -0.07 barg x 120C / 0C (1st stage) 2
Insulation (type/thickness): /
Capacity: 18500kg/h POLYMER PELLETS & 22400 Sm3/h (1st STAGE) / 26900 Sm3/h (2nd STAGE) 2
Classifier size: 12.5 mm (spacing)

3817 MS ES-K-2780 — 4"-MS-ES1056-3CB1S02-HC — NOTE 12 — NOTE 2 — 3/4" — 3/4" — 3/4"

AIR ES-K-2713 3821 — TO ES-FIL-06 FBD EXHAUST AIR FILTER — 44"x30" — 44"-DUCT-ES1516-1SA0V91-HC

T0503 AH PRIORITY 1 ALARM NOTE 11 — T0003 T — T0003 T — T0003 E — 1-1/2"

T0503 Y — T S20 NOTE 6 — T0503 T — T0503 T SCD — T0503 E SCD — RTD — 1-1/2"

T0503 Y

SP'ES-0037 — SP'ES-0038 — 4"x2" — 4"x2"

32"x28" — 32"x28"

SP'ES-0040 — SP'ES-0039

NOTE 14 — P1015 G — NOTE 14 — P1016 G

PELLETS 3818 ES-K-2701 — NOTES 5, 7 — FROM ES-D-02 SPIN DRYER

ES-D-05

FIRST STAGE FBD — ACCESS DOOR — SECOND STAGE FBD — ACCESS DOOR

3/4" NOTE 8

NOTE 15 DOOR (TYP.) — VIEW PORT (TYP.) — DOOR (OPPOSITE SIDE-TYP.) — NOTE 15

ADJUSTABLE PLATE — ADJUSTABLE PLATE

T0504 Y — T0504 Y — T0504 T — T0504 T — T S20 — T0504 AH NOTE 11 PRIORITY 1 ALARM

SCD T0504 T — NOTE 6

SCD T0504 E — RTD — T0004 E — T0004 T — T0004 T — 1-1/2" — 1-1/2"

32"-DUCT-ES1560-1SA0VS1-HC — 36"x32" — 36"-DUCT-ES1560-1SA0VS1-HC

AIR 3824 ES-K-2712 — TO ES-FIL-07 FBD INTERSTAGE AIR FILTER

C0003 L LIGHTS — C0003 T NOTE 3 CAMERA FIXED — SP'ES-0043

F1008 I NV IA

H0002 VS — H0002 IA — H0002 V — H0002 H S53

INFRARED NOTE 4 — T0008 T — T0008 T

NOTE 1 — SP'ES-0042

REMOVAL CLASSIFIER

H0002 ZC — H0002 ZO — CHUTE-ES-1578

NOTE 13 C1A

NOTE 10 — OVERS & OFF SPEC WASTE BOX AT GRADE — SP'ES-0007

SPRING ISOLATION SYSTEM (W/E)

ES-DM-05A — ES-DM-05B

VFD (IN SS)

VENDOR

Z0001 E — H0520 S — 0521 S — 0522 S — Z0002 E — MAN/AUTO START — STOP — FBD CONTROLLER (FIELD)

H0523 S LATCHING PACKAGE-STOP

SP'ES-0045 — SP'ES-0044

PHASE ANGLE TRASM. Z0030 T

32"x30" — 32"x28"

F0031 T — F0031 T — F0031 E

28"-DUCT-ES1556-1SA0V91-HC — 30"-DUCT-ES1519-1SA0V91-HC

M0113 ZR3 STATUS MOTOR ES-DM-05A — H0024 S START PACKAGE FROM DCS — H0025 S STOP PACKAGE FROM DCS — H0026 L RUNING PACKAGE TO DCS — H0027 A FAULT PACKAGE TO DCS — P0010 SL LOWW PRESS PURGE PACKAGE TO DCS — M0114 ZR3 STATUS MOTOR ES-DM-05B — Z0030 Y PHASE ANGLE COMMAND

F0002 T — F0002 T — F0002 E

12"-DUCT-ES1514-1SA0VS1 — 36"-DUCT-ES1515-1SA0VS1-HC — 32"x28" — 28"-DUCT-ES1515-1SA0VS1-HC

P0007 T — P0007 T — 3/4"

38"-28"

SP'ES-0046 — CHUTE-ES-1570 — SLOPE 75° MIN — NOTE 7

DRY PELLETS 3820 ES-K-2722 — TO ES-X-10 PELLET DUST MIXER

AIR 3823 ES-K-2712 — FROM ES-E-07 FBD INTERSTAGE AIR HEATER — 40"-DUCT-ES1519-1SA0V91-HC — 40"x30"

AIR 3819 ES-K-2710 — FROM ES-E-08 FBD INTAKE AIR HEATER — 38"-DUCT-ES1513-1SA0VS1-HC

NOTES:

1. LOW HUMIDITY AIR TO BLOW OVER CLASSIFIER THROUGH METAL HOOD WITH PLASTIC SIDE CURTAINS.
2. THIS IS A MANUAL SNUFFING STEAM VALVE. IT IS LOCATED IN AN EASILY ACCESSED LOCATION THAT WOULD NOT BE INVOLVED IN A FIRE IN THE FBD AREA.
3. CAMERA AND LIGHT INSTALLED SUCH THAT A VIEW UNDER METAL HOOD AND SIDE CURTAIN IS POSIBLE.
4. PROVIDE FIXED, NON-CONTACT TEMPERATURE SENSOR/TRANSMITTER TO MONITOR MOVING PELLETS USING INFRARED RADIATION.
5. REMOVABLE CHUTE ACCESIBLE FROM PLATFORM AND FOR CLEANING.
6. SAFETY CRTITICAL TEMPERATURE INDICATOR TO ALARM FOR POTENTIAL FIRE IN FBD, ES-D-05.
7. DRAGON-ELITE-1 INTERNAL COATING.
8. SUPPORT THE FBD HOOD FROM OVERHEAD STRUCTURE.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
10. PROVIDE GROUNDING ROD FOR BOX.
11. PROVIDE LOCAL ALARM HORN.
12. PROVIDE LINE WITH STEAM TRAPS AT EVERY LOW POINT.
13. PROVIDE ACCES DOORS ON OPPOSITE SIDES AT FOD DISCHARGE.
14. PRESSURE GAUGE TO BE READABLE FROM PLATFORM.
15. FALLING HAZARD. OPEN BY AUTHORISED PERSONNEL ONLY.

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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

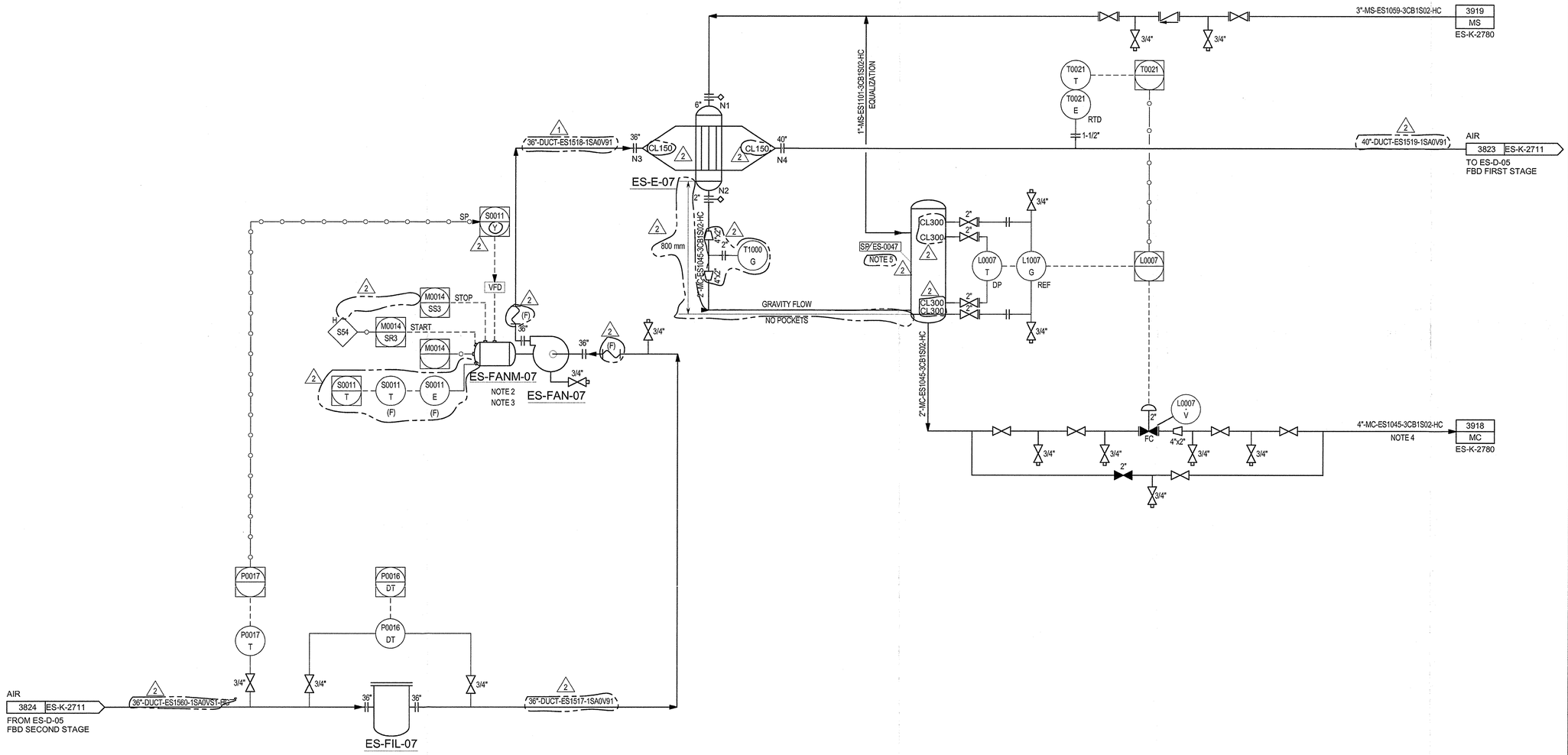
TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
FLUID BED DRYER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ES-K-2711	1 OF 1	2

ES-FIL-07
Service: FBD INTERSTAGE AIR FILTER
Type: Filter
Capacity: 41262.7 m^3/hr (39750 Sm3/hr) 2
Design Pressure (Max / Min) @ Temperature: 0.1 barg / -0.1 barg x 90.0 C /0.0 C
Differential Pressure: 0.0 bar (-4 mbar)
Material of Construction: 304 S.S.
TRIM: 2

ES-E-07
Service: FBD INTERSTAGE AIR HEATER
Type: Air Heater (FIN TUBES) (*)
Heat Duty: 944 kW
Materials of Construction: 304 S.S.



ES-FAN-07
Service: FBD INTERSTAGE AIR FAN
Capacity: 37615.0 nm^3/hr (39750 Sm3/hr) 2
Differential Press: 0.0 bar (0.065 bar)
Power Requirements: 110 kW (EST)
Material of Construction: 304 S.S.

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
2. VFD MOTOR.
3. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
2 4. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
2 5. SP/ES-0047 DIMENSIONS: 8" DIAMETER x 2620 mm LENGTH.

HOLDS:

4. DELETED.

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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
FLUID BED DRYER INTERSTAGE AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2712	1 OF 1	2

ES-FIL-06
Service: FBD EXHAUST AIR FILTER
Type: Filter
Capacity: 61245.8 m^3/hr (48000Sm3/hr) 1
Design Pressure (Max / Min) @ Temperature: 0.0 barg / -0.1 barg x 120.0 C /0°C
Differential Pressure 0.0 bar (-4 mbar) 1
Material of Construction: 304 S.S.
TRIM:

AIR
3821 ES-K-2711
FROM ES-D-05
FBD FIRST STAGE

1 44"-DUCT-ES1516-1SA0V91-HC

P0024 T

3/4"

ES-FIL-06

44" 44"

3/4"

P0019 DT

P0019 DT

3/4"

1 44"-DUCT-ES1520-1SA0V91-HC

1 (F)

1 ES-FAN-06 (F)

NOTE 3 ES-FANM-06

44" 44"

M0015

NOTE 2

1

S0012 E

S0012 T

S0012 T

(F) (F)

STOP M0015 SS3

START M0015 SR3

3/4"

P0024

SP S0012 (Y)

1

VFD

1 44"-DUCT-ES1508-1SA0V91-PPI

AIR
3791 ES-K-2701
TO EXHAUST
VENT STACK

ES-FAN-06
Service: FBD EXHAUST AIR FAN
Capacity: 45422.0 nm^3/hr (48000 Sm3/hr) 1
Differential Press: 0.0 bar (0.028 bar)
Power Requirements: 75 kW
Material of Construction: 304 S.S.
Design Pressure/ Temperature: 0.07 barg/ -0.07 barg x 120 °C/ 0 °C

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
2. VFD MOTOR.
3. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

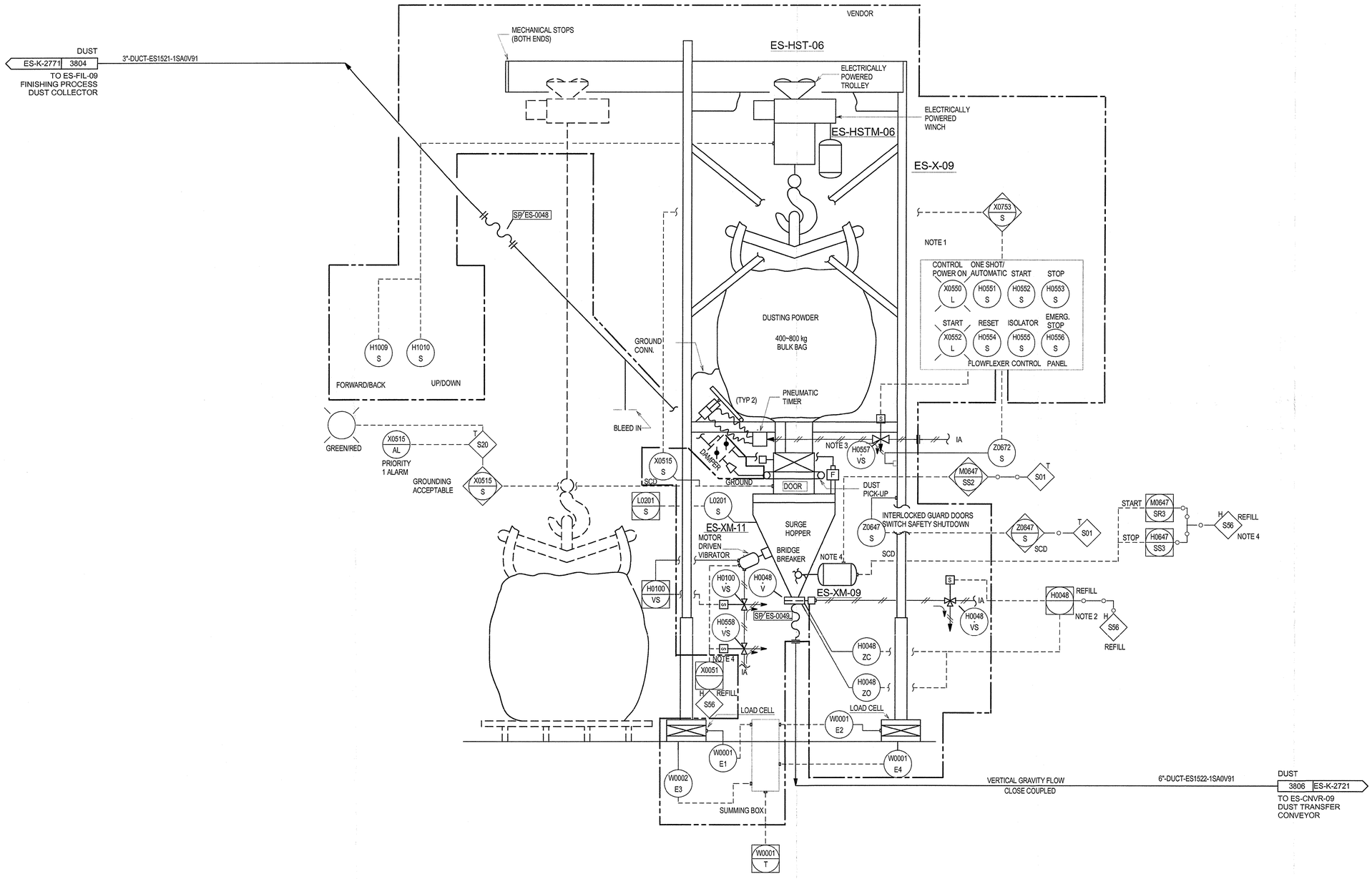
TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
FLUID BED DRYER EXHAUST AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2713	1 OF 1	1

ES-X-09
Service: DUST SUPERSACK UNLOADER
FRAME CAP: 2000 kg
DRIVER: 11kW (EST)
HOIST TRATING: 1000kg @ 0.04 m/s
TROLLEY SPEED: 0.20 m/s

ES-HST-06
Service: HOIST FOR ES-X-09



NOTES:

1. ALL PELLET AND DUST HANDLING EQUIPMENT IN THE ELECTRICALLY CLASSIFIED AREA (CLASS II, DIVISION 2, GROUPS F AND G) MUST BE GROUNDED AND ELECTRICALLY BONDED.
2. DELETED.
3. IRIS VALVE.
4. VIBRATOR AND BRIDGE BREAKER ONLY RUN WHEN MATERIAL IS FLOWING (DEMAND FOR REFILL BY LIW FEEDER).
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

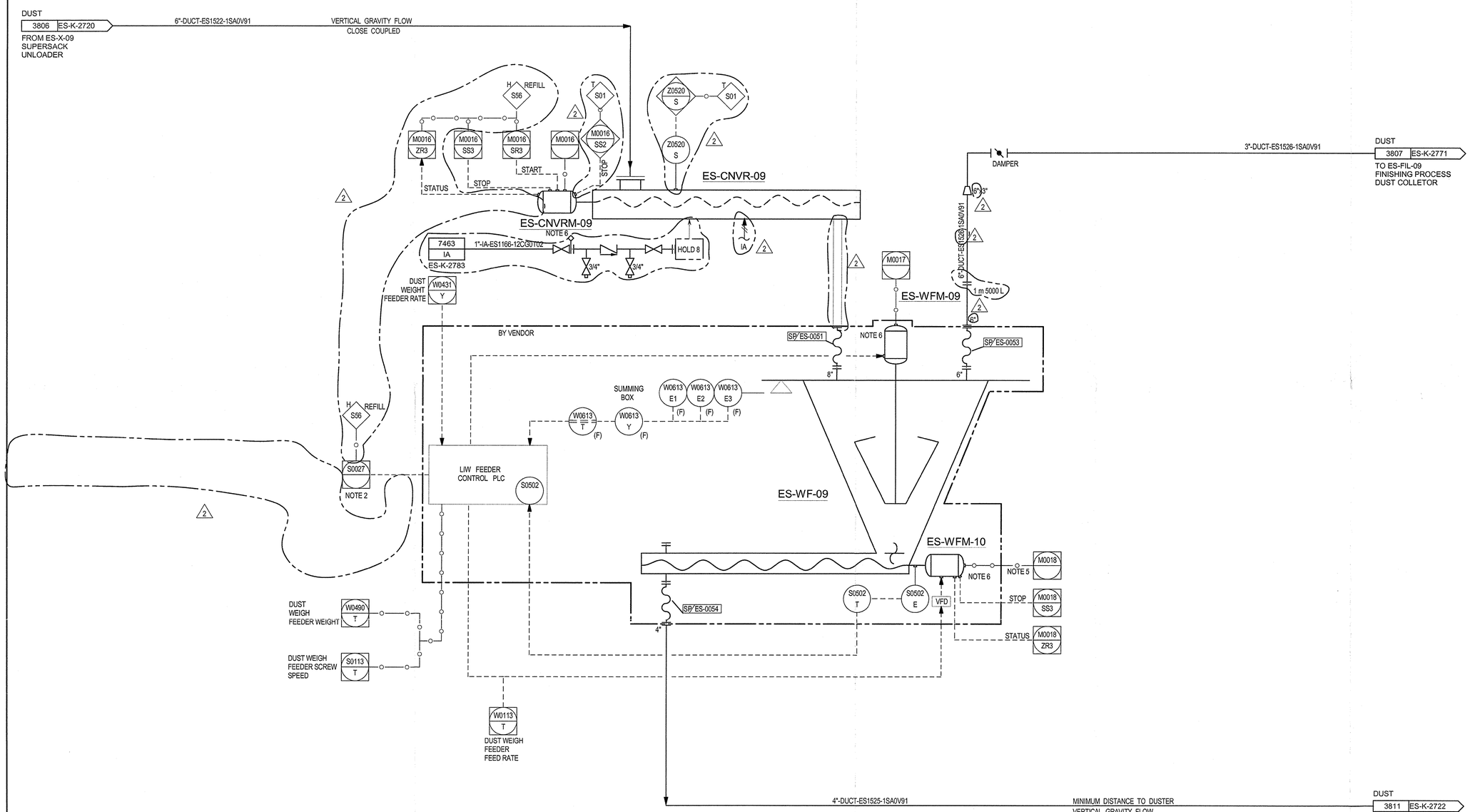
TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
DUST SUPERSACK UNLOADER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2720	1 OF 1	2

ES-CNVR-09
Service: DUST TRANSFER CONVEYOR
CAP.: 6.25 m3/h

ES-WF-09
Service: DUST WEIGH FEEDER
CAP.: 20~100 kg/h



NOTES:

1. ALL PELLET AND DUST HANDLING EQUIPMENT IN THE ELECTRICALLY CLASSIFIED AREA (CLASS II, DIVISION 2, GROUPS F AND G) MUST BE GROUNDED AND ELECTRICALLY BONDED.
2. REFILL SIGNAL FROM ES-WF-09 TO START DUST CONVEYOR, ES-CNVR-09, AND THEN OPEN SUPERSACK SURGE HOPPER SLIDE GATE VALVE (SEE ES-K-2720). AT STOP OF REFILL, SLIDE GATE VALVE WILL CLOSE AND DUST CONVEYOR WILL SHUTDOWN. 2
3. DELETED.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. VFD MOTOR.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

8. BY VENDOR 2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	~~RAF~~	RAF
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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

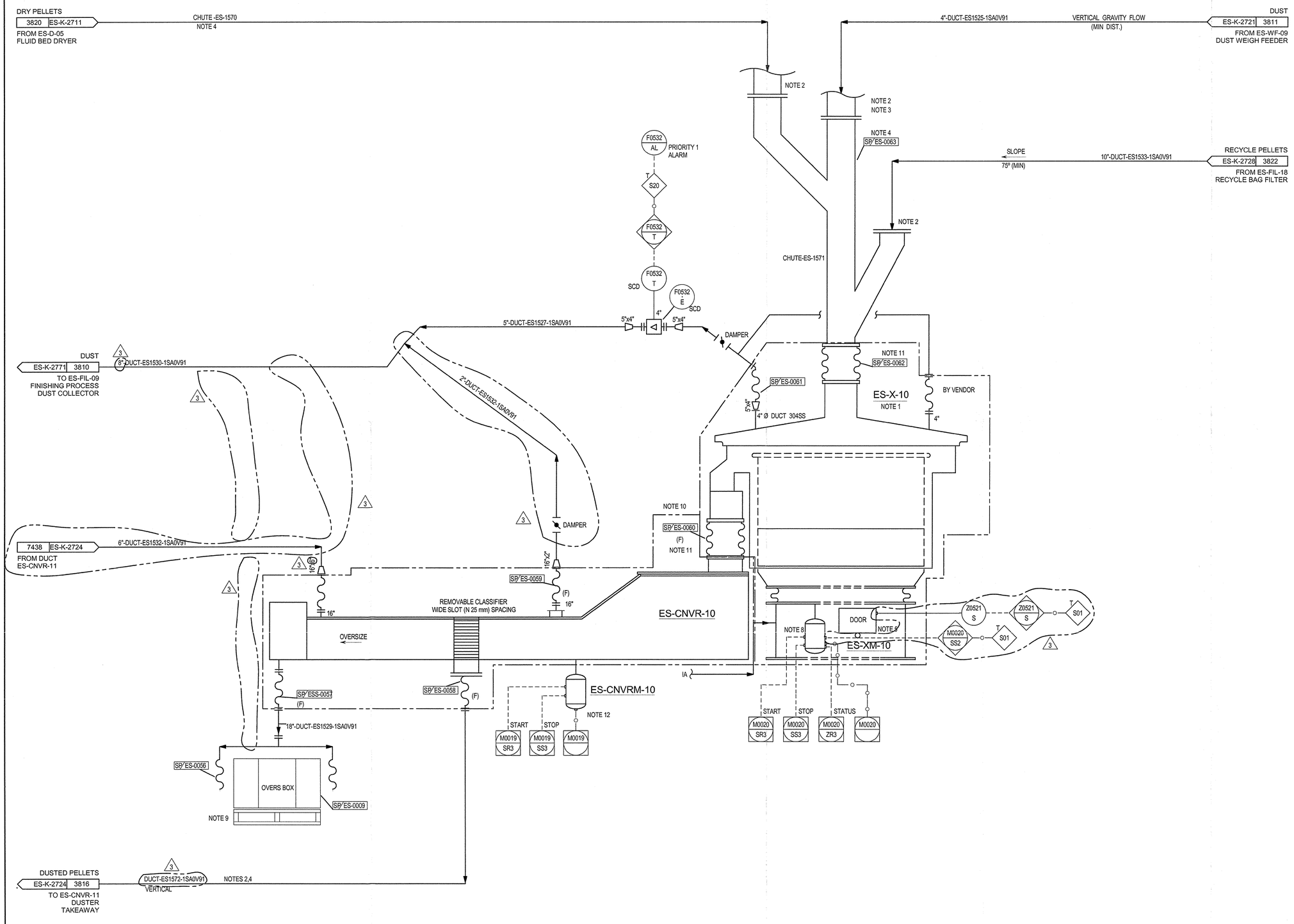
TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
DUST WEIGH FEEDER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ES-K-2721	1 OF 1	2

ES-X-10
Service: PELLET DUST MIXER
CAP.: 18500 kg/h POLYMER PELLETS + 92.5 kg/h DUST

ES-CNVR-10
Service: DUSTER TAKE AWAY CONVEYOR
CAP.: 18600 kg/h



NOTES:

1. ALL FACILITIES IN DUST HANDLING SERVICE TO BE GROUNDED AND BONDED.
2. PROVIDE CHUTE WITH REMOVABLE PANELS FOR CLEANOUT.
3. DUST TO ENTER ABOVE BOTH PELLET CONNECTIONS.
4. DRAGON-ELITE-1 COATING ON PROCESS CONTACT SURFACES.
5. THIS DOOR MUST BE SECURED WITH AT LEAST TWO (2) BOLTS (OR SIMILAR FASTENERS THAT REQUIRE A TOOL TO REMOVE) IN ADDITION TO ANY OTHER DOOR LATCHES.
6. NOT USED.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
8. VFD MOTOR.
9. PROVIDE GROUNDING ROD FOR BOX.
10. PROVIDE ENOUGH SPACE BETWEEN ES-X-10 AND ES-CNVR-10 TO AVOID CRASH.
11. EPC CONTRACTOR TO PROVIDE A WAREHOUSE SPARE FOR FLEXIBLE HOSE CONNECTION.
12. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

3

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
3	13/09/2013	FINAL ISSUE	MCG	DBE	RAF
2	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

شركة الجبيل للبتروكيماويات
al jubail petrochemical co.

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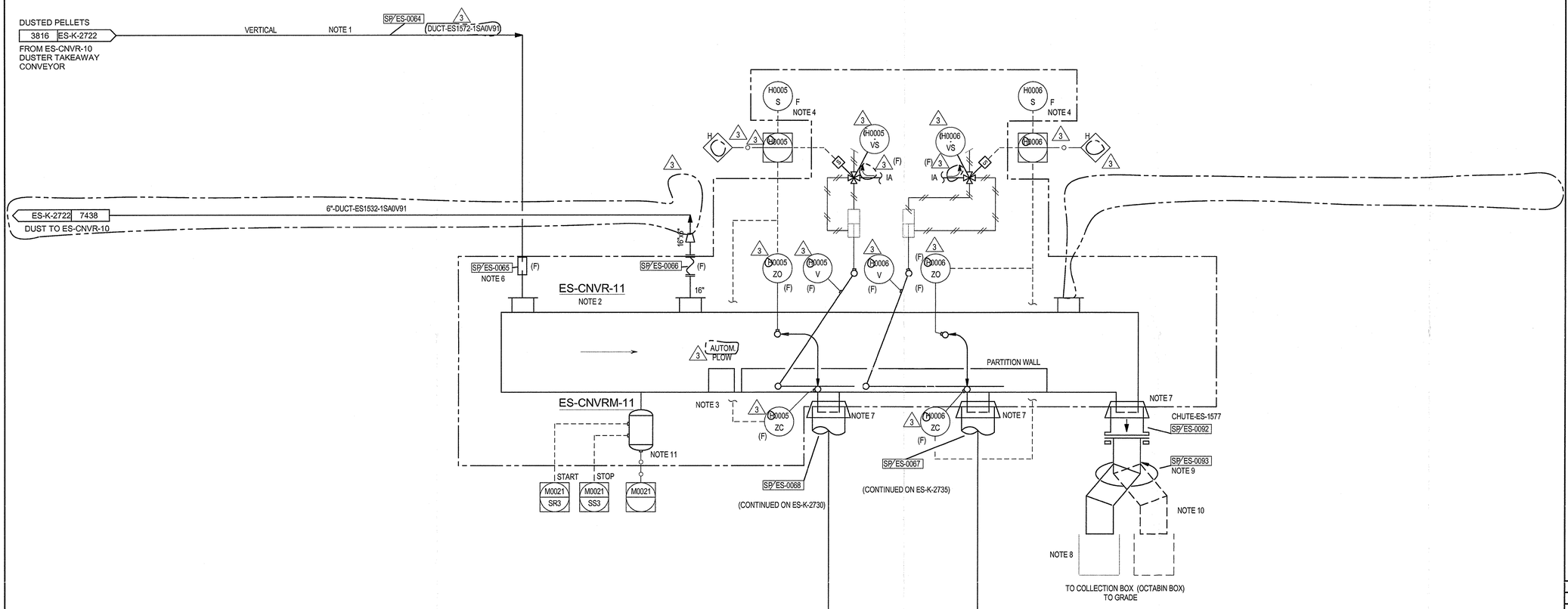
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PELLET DUST MIXER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

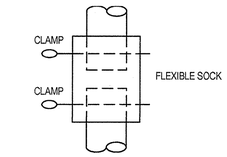
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2722	1 OF 1	3

ES-CNVR-11
Service: DUSTER TAKE AWAY CONVEYOR TO BAGGING
Capacity: 18600 Kg/hr

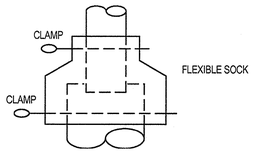


NOTES:

1. PROVIDE CHUTE WITH REMOVABLE PANELS FOR CLEAN-OUT.
2. ALL FACILITIES IN DUST HANDLING SERVICE ARE TO BE GROUNDED AND BONDED.
3. MANUAL POSITION PLOW TO SEPARATE CONVEYOR INTO 100% FLOW TO EITHER BAGGING MACHINES OR TWO 50% PATHS TO ALLOW FEEDING BOTH BAGGING MACHINE SIMULTANEOUSLY.
4. LOCAL HAND SWITCH TO BE LOCATED AT THE OUTLET OF BAGGING MACHINE.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
6. DETAIL OF CONNECTION.



7. DETAIL OF CONNECTION.



8. PROVIDE GROUNDING ROD FOR BOX.
9. SWIVEL CONNECTION.
10. HOUSE KEEPING VACUUM DROP TO BE PROVIDED ON FIRST FLOOR IN THE VICINITY OF THE BAGGING EQUIPMENT.
11. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

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2	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PELLET DISTRIBUTION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2724	1 OF 1	3

ES-FDR-19
Service: PELLET RECYCLE ROTARY VALVE

ES-FIL-18
Service: RECYCLE BAG FILTER
Type: Bag filter
Capacity:
Design Pressure (Max / Min) @ Temperature: 0.5 barg / -1.0 barg x 90.0 C / 0ºC
Differential Pressure:
Material of Construction: 304 S.S.
TRIM:

ES-X-19
Service: PELLET RECYCLE SYSTEM PACKAGE
PELLET CAP.: 1000 kg/h

ES-CNVR-13
Service: RECYCLE VIBRATING FEEDER
CAP.: 1000 kg/h

ES-TK-17
Service: BOX DUMP TANK
Dimension.: x
Capacity: 2 m^3
Materials of Construction: 304 S.S.
TRIM:

ES-X-18
Service: RECYCLE AGGLOMERATE BREAKER
CAP.: 1000 kg/h

ES-X-17
Service: BOX DUMPER

ES-B-19
Service: RECYCLE VACUUM CONVEYING BLOWER
Capacity:
Differential Press:
Power Requirements: 15 kW (EST.)
Material of Construction: CS

NOTES:

1. PROVIDE A VOLUME OF AIR CLOSE TO THE FILTER THAT HOLDS ENOUGH AIR AT 4 barg TO OPERATE PULSE JET FOR ONE CYCLE AS THE PRESSURE IN THE STORAGE VOLUME LOWERS FROM 5.5 barg TO 4 barg.
2. ALL FACILITIES IN DUST HANDLING SERVICE ARE TO BE GROUNDED AND BONDED.
3. BAG DIFFERENTIAL PRESSURE.
4. TANGENTIAL ENTRY NOZZLE.
5. ROTARY VALVE FEED SHALL BE SET AT A PROVIDED BLEND RATIO TO PLANT PRODUCTION.
6. CONVEYING LINE TO HAVE QUICK DISCONNECT FLANGES ON VERTICAL SECTION. HEIGHT OF LINE MUST ALLOW BOX TO BE PLACED UNDER LOWER FLANGE TO UNLOAD PLUGGED VERTICAL LINE.
7. DELETED.
8. BOX DUMPER IS HYDRAULICALLY OPERATED WITH INTERNAL SS POUR HOOD EQUIPPED WITH SLIDE GATE.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
10. VFD MOTOR.
11. REJECT BAGS ARE MOVED TO THIS LOCATION BY FORKLIFT.
12. PROVIDE BREAK-APART FLANGES TO ALLOW FOR UNPLUGGING.
13. KEY SYSTEM SHALL BE PROVIDED TO DEENERGIZE BOX DUMPER.
14. EQUIPMENT SHALL BE ACCESIBLE FOR CLEANING.
15. EXPLOSION VENTING DEVICE MUST BE LOCATED AWAY FROM ANY POINT WITH PERSONNEL ACCESS.
16. BY OTHERS.
17. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
18. ALL THE SIGNALS ARE VIA DATALINK BETWEEN PLC TO DCS.

HOLDS:

3. DELETED.

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2	13/09/2013	FINAL ISSUE	MCG	RF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PELLET RECYCLE SYSTEM

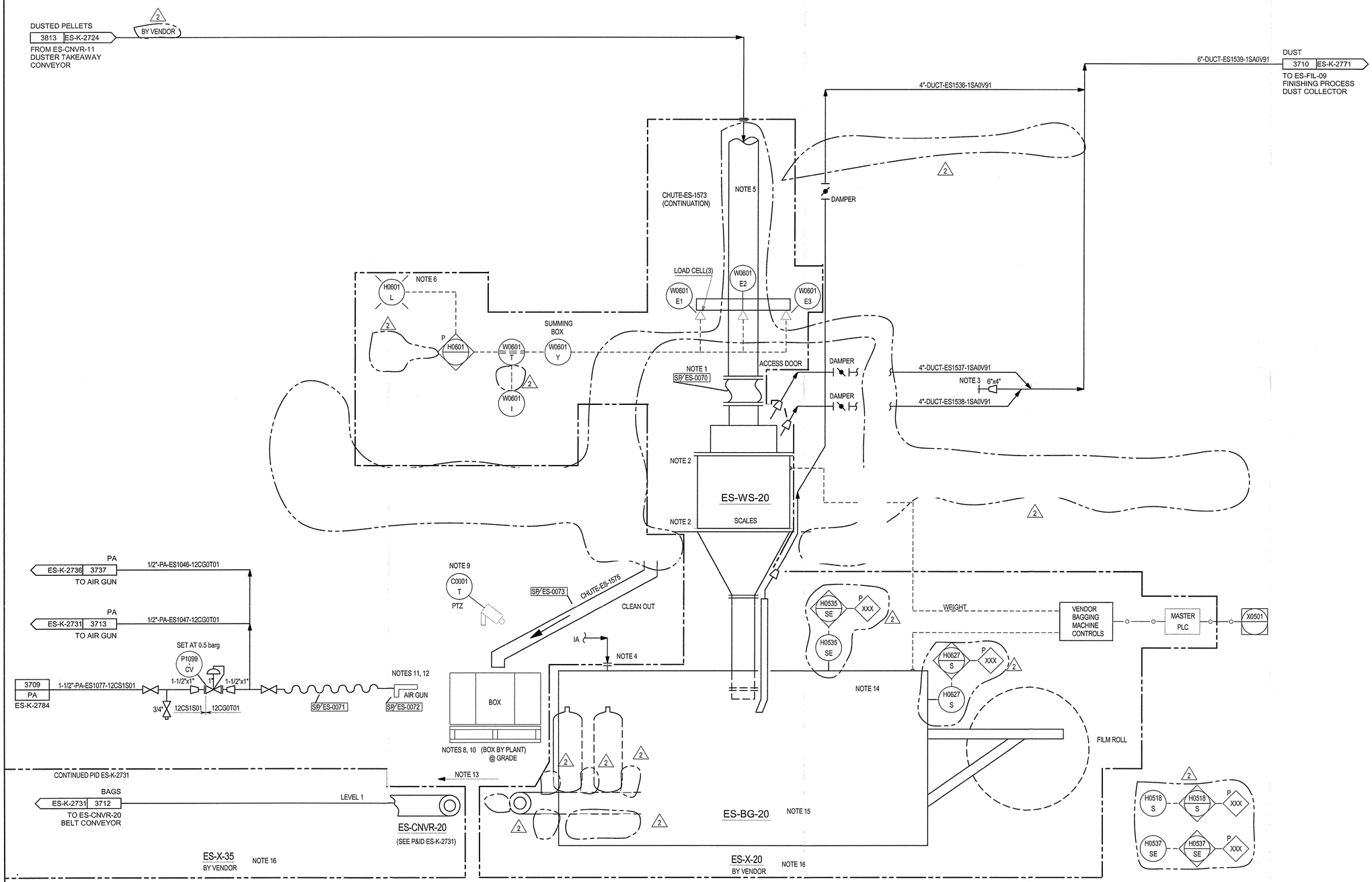
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ES-K-2728	1 OF 1	2

ES-BG-20
Service: LINE A BAGGING MACHINE
CAP.: 800 BAGS/h; 20000 kg/h

ES-WS-20
Service: LINE A LOAD/WEIGH SCALE FOR BAGGING MACHINE

ES-X-20
Service: BAGGING MACHINE PACKAGE



NOTES:

1. FLEXIBLE MATERIAL TO ISOLATE CHUTE FROM SCALES.
2. ISOLATION MATERIAL FOR SCALES.
3. BLEED IN ORIFICE TO MAINTAIN AIR VELOCITY IN AIR DUCT AND SREAM BELOW 10% L.E.L.
4. INSTRUMENT AIR SUPPLIES VARIOUS VENDOR INSTRUMENTATION INSIDE BAGGING MACHINE HOUSING.
5. CHUTE AND SCALE INTERNAL SURFACES TO BE DRAGON-ELITE COATED.
6. LOCATE HORN BEACON FOR CHUTE PLUG INDICATION NEAR BAGGING MACHINE ON BAGGING MACHINE FLOOR.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
8. REGULAR OCTABIN BOX TO BE USED.
9. CAMERA TO MONITOR OPERATION CONDITIONS OF BOTH BAGGING MACHINES, MS-BG-20 AND MS-BG-40.
10. PROVIDE GROUNDING ROD FOR BOX.
11. FOR FLOOR CLEANING.
12. GRAINGER MODEL NO. 75LJ036AA OR EQUIVALENT.
13. ENSURE PINCH POINTS AND HAND TRAPS ARE PREVENDED OR GUARDED AT THE TRANSITION BETWEEN ES-BG-20/40 AND ES-CNVR-20/30.
14. BAGGING MACHINE ENTRANCE PROTECTED WITH DOORS WITH INTERLOCKS.
15. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.
16. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DBF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"A" LINE BAGGING MACHINE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ES-K-2730	1 OF 1	2

ES-CNVR-20
Service: BELT CONVEYOR

ES-CNVR-21
Service: BELT CONVEYOR

ES-CNVR-22
Service: BAG LINE METAL DETECTOR
CAP: 800 BAGS/h; 20000 kg/h

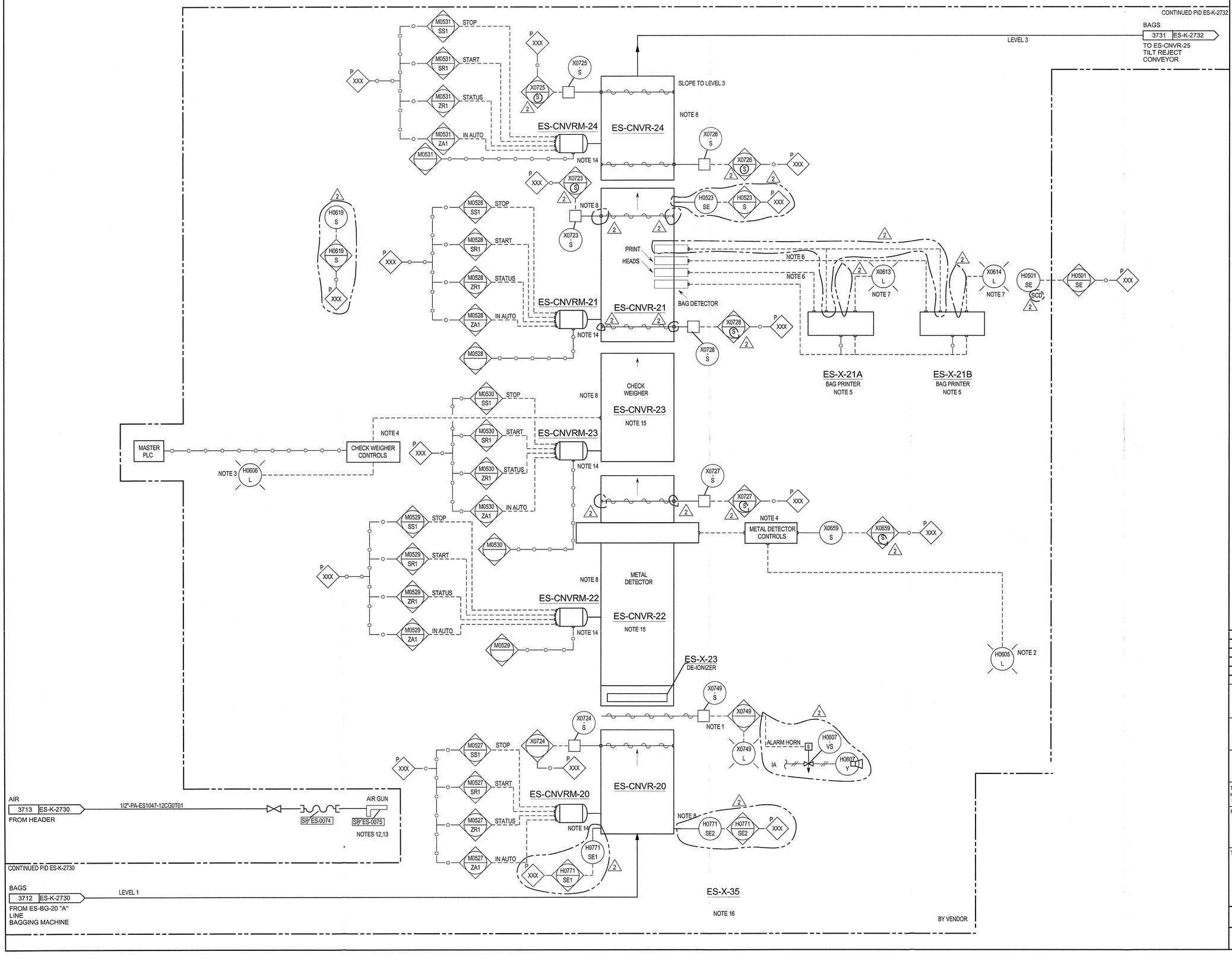
ES-CNVR-23
Service: BAG LINE CHECK WEIGHER
CAP: 800 BAGS/h; 20000 kg/h (*)

ES-CNVR-24
Service: BELT CONVEYOR

ES-X-23
Service: LINE A BAG DE-IONIZER

ES-X-21A / B
Service: LINE A BAG PRINTER
CAP: 800 BAGS/h

ES-X-35
Service: CONVEYOR PACKAGE



NOTES:

1. OPTICAL SENSOR TO DETECT BROKEN BAG SPILLS WITH WARNING LIGHT. SPILL TO COLLECT IN REMOVABLE PAN. PAN CAPACITY 1 BAG VOLUME.
2. METAL DETECTOR TO SOUND ALARM HORN AND LIGHT UP RED LIGHT UPON DETECTION AND REJECTION OF BAGS.
3. CHECK WEIGHER TO SOUND ALARM HORN AND LIGHT UP AMBER LIGHT UPON DETECTION AND REJECTION OF BAGS.
4. PLC TO INTERFACE WITH VENDOR CONTROLS AND OPERATE REJECT TILT CONVEYOR ES-CNVR-25 IF A REJECT SIGNAL IS SENT FROM THE METAL DETECTOR OR CHECK WEIGHER.
5. TWO BAGS PRINTER SYSTEMS INSTALLED, WITH EACH SYSTEM PRINTING ALTERNATE BAGS. IF DOWNTIME OF ONE SYSTEM OCCURS, OTHER SYSTEM CAN HANDLE PRINTING ON ALL BAGS.
6. UMBILICAL CORD (INK, AIR AND ELECTRONIC SIGNAL LINES).
7. ALERT LIGHT TO WARN OF PRINTER PROBLEM.
8. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
10. DELETED.
11. DELETED.
12. FOR FLOOR CLEANING.
13. GRAINGER MODEL NO. 75LJ036AA OR EQUIVALENT.
14. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
15. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.
16. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRS	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"A" BAG WEIGH & METAL DETECT

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2731	1 OF 1	2

ES-CNVR-26
Service: POWERED ROLLER REJECT CONVEYOR

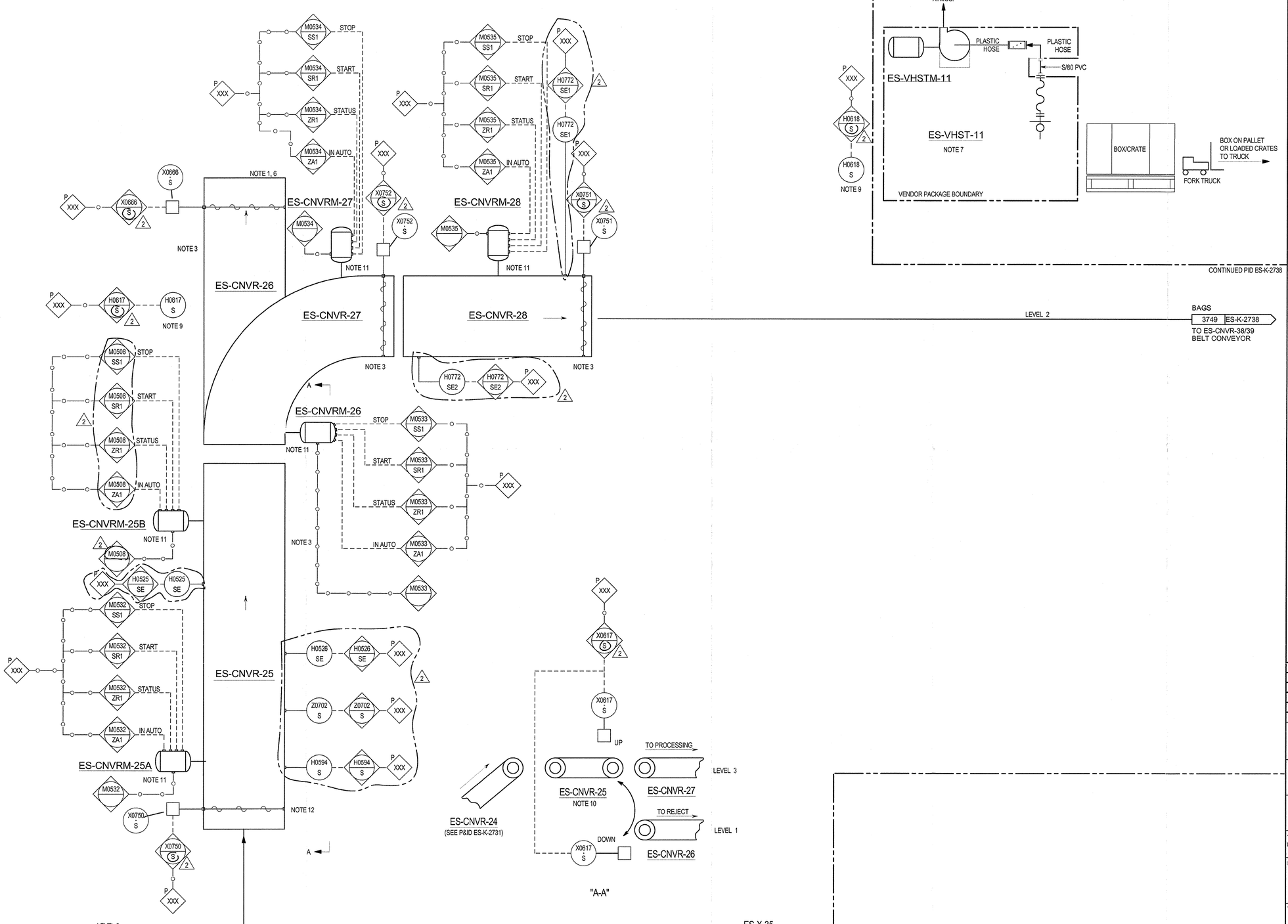
ES-CNVR-27
Service: SLIDING BELT CONVEYOR-90° CURVE

ES-CNVR-28
Service: BELT CONVEYOR

ES-VHST-11
Service: REJECT SYSTEM VACUUM HOIST
Capacity:
Driver:

ES-CNVR-25
Service: TILT REJECT CONVEYOR

CONTINUED PID ES-K-2731



CONTINUED PID ES-K-2738

NOTES:

1. ALLOW SPACE FOR HOLD-UP OF 6 REJECT BAGS.
2. PLC TO INTERFACE WITH VENDOR CONTROLS AND OPERATE REJECT TILT CONVEYOR ES-CNVR-25 IF A REJECT SIGNAL IS SENT FROM THE METAL DETECTOR OR CHECK WEIGHER.
3. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. DELETED.
6. REJECT BAGS ARE MOVED TO PELLET RECYCLE SYSTEM BY FORKLIFT.
7. VACUUM HOIST SERVICE BOTH REJECT CONVEYORS, ES-CNVR-26 AND ES-CNVR-36.
8. DELETED.
9. LOCAL HAND SWITCH FOR ES-V0617-V / ES-V0618-V.
10. PROVIDE GUARDING TO PREVENT PERSONNEL ACCESS TO HAZARD AREA AROUND ES-CNVR-25 AND ES-CNVR-29.
11. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
12. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
13. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DBF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
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C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"A" BAG LINE REJECT SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2732	1 OF 1	2

ES-BG-40
Service: LINE B BAGGING MACHINE
CAP.: 800 BAGS/h; 20000 kg/h

ES-WS-40
Service: LINE B LOAD/WEIGH SCALE FOR BAGGING MACHINE

DUSTED PELLETS
3814 ES-K-2724
FROM ES-CNVR-11
DUSTER TAKEAWAY
CONVEYOR

2 BY VENDOR

6"-DUCT-ES1544-1SA0V91
DUST
3732 ES-K-2771
TO ES-FIL-09
FINISHING PROCESS
DUST COLLECTOR

4"-DUCT-ES1541-1SA0V91

CHUTE-ES-1571
(CONTINUATION)

NOTE 5

DAMPER

LOAD CELL(3)

W0604 E2

W0604 E1

W0604 E3

ACCESS DOOR

H0604 L

NOTE 6

SUMMING BOX

W0604 Y

P H0604

W0604 T

W0604 I

NOTE 1
SP ES-0077

DAMPER

DAMPER

4"-DUCT-ES1542-1SA0V91

NOTE 3 6"x4"

4"-DUCT-ES1543-1SA0V91

NOTE 2

ES-WS-40
SCALES

NOTE 2

SP ES-0078

CLEAN OUT
CHUTE-ES-1576

IA

NOTE 4

H0536 SE

P XXX

H0536 SE

NOTE 11

WEIGHT

VENDOR
BAGGING
MACHINE
CONTROLS

MASTER
PLC

X0502

H0628 S

P XXX

H0628 S

FILM ROLL

NOTE 8, 9 (BOX BY PLANT)
AT GRADE

NOTE 10

CONTINUED PID ES-K-2736

BAGS
ES-K-2736 3736
TO ES-CNVR-30
BELT CONVEYOR

LEVEL 1

ES-CNVR-30
(SEE P&ID ES-K-2736)

ES-BG-40
NOTE 12

ES-X-35
BY VENDOR

ES-X-20
BY VENDOR
NOTE 13

NOTES:

1. FLEXIBLE MATERIAL TO ISOLATE CHUTE FROM SCALES.
2. ISOLATION MATERIAL FOR SCALES.
3. BLEED IN ORIFICE TO MAINTAIN AIR VELOCITY IN AIR DUCT AND STREAM BELOW 10% E.L.
4. INSTRUMENT AIR SUPPLIES VARIOUS VENDOR INSTRUMENTATION INSIDE BAGGING MACHINE HOUSING.
5. CHUTE AND SCALE INTERNAL SURFACES TO BE DRAGON-ELITE COATED.
6. LOCATE HORN BEACON FOR CHUTE PLUG INDICATION NEAR BAGGING MACHINE ON BAGGING MACHINE FLOOR.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
8. REGULAR OCTABIN BOX TO BE USED.
9. PROVIDE GROUNDING ROD FOR BOX.
10. ENSURE PINCH POINTS AND HAND TRAPS ARE PREVENTED OR GUARDED AT THE TRANSITION BETWEEN ES-BG-20/40 AND ES-CNVR-30/30.
11. BAGGING MACHINE ENTRANCE PROTECTED WITH INTERLOCKED DOORS.
12. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.
13. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

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2	13/09/2013	FINAL ISSUE	MCG	DRS	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"B" LINE BAGGING MACHINE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ES-K-2735	1 OF 1	2

ES-CNVR-30
Service: BELT CONVEYOR

ES-CNVR-31
Service: BELT CONVEYOR

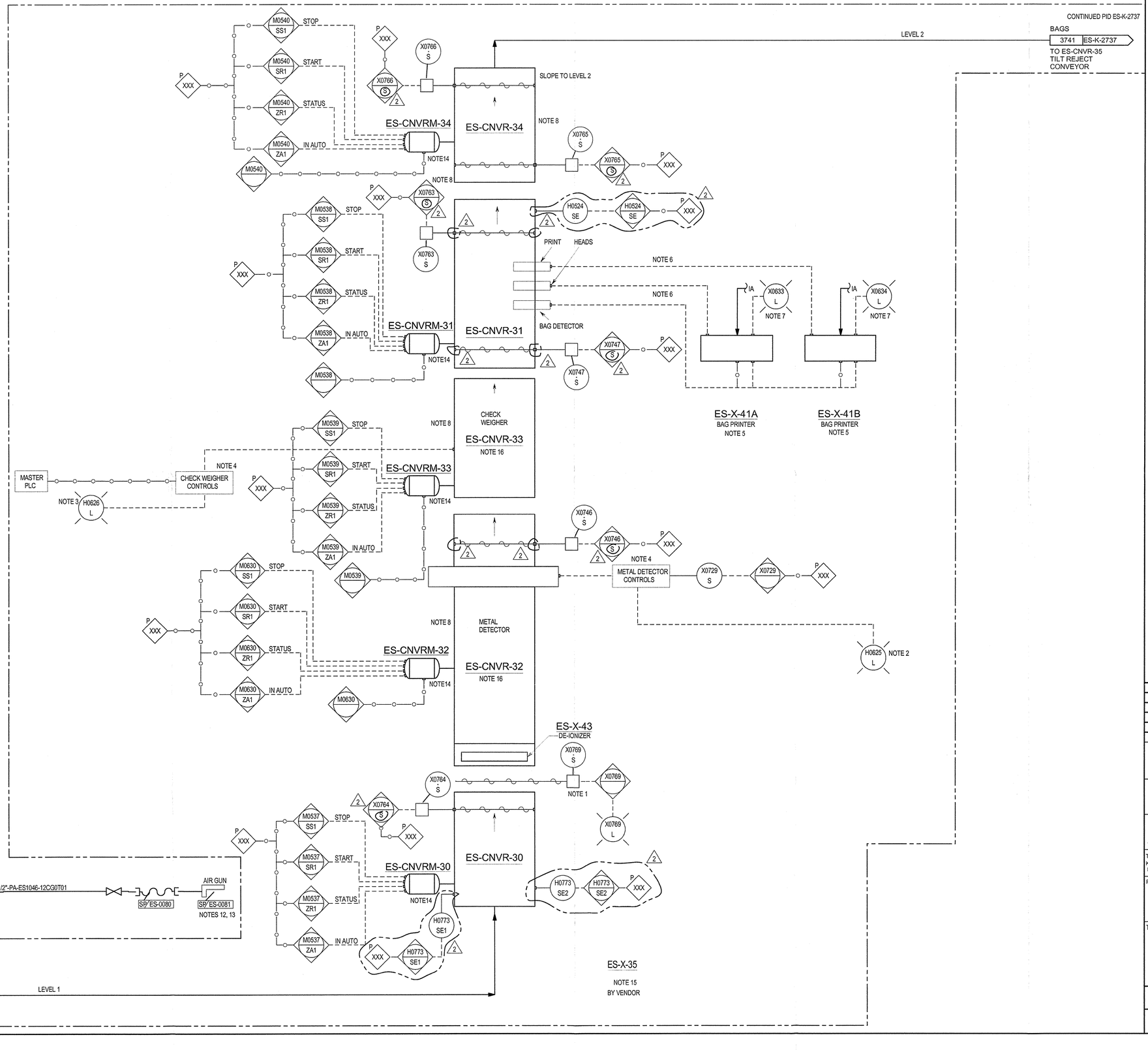
ES-CNVR-32
Service: BAG LINE METAL DETECTOR

ES-CNVR-33
Service: BAG LINE CHECK WEIGHER
CAP: 800 BAGS/hr; 20000 kg/h

ES-CNVR-34
Service: BELT CONVEYOR

ES-X-43
Service: LINE B BAG DE-IONIZER

ES-X-41A/ B
Service: LINE A BAG PRINTER
CAP: 800 BAGS/h



NOTES:

1. OPTICAL SENSOR TO DETECT BROKEN BAG SPILLS WITH WARNING LIGHT. SPILL TO COLLECT IN REMOVABLE PAN. PAN CAPACITY 1 BAG VOLUME.
2. METAL DETECTOR TO SOUND ALARM HORN AND LIGHT UP RED LIGHT UPON DETECTION AND REJECTION OF BAGS.
3. CHECK WEIGHER TO SOUND ALARM HORN AND LIGHT UP AMBER LIGHT UPON DETECTION AND REJECTION OF BAGS.
4. PLC TO INTERFACE WITH VENDOR CONTROLS AND OPERATE REJECT TILT CONVEYOR ES-CNVR-35 IF A REJECT SIGNAL IS SENT FROM THE METAL DETECTOR OR CHECK WEIGHER.
5. TWO BAGS PRINTER SYSTEMS INSTALLED, WITH EACH SYSTEM PRINTING ALTERNATE BAGS. IF DOWNTIME OF ONE SYSTEM OCCURS, OTHER SYSTEM CAN HANDLE PRINTING ON ALL BAGS.
6. UMBILICAL CORD (INK, AIR AND ELECTRONIC SIGNAL LINES).
7. ALERT LIGHT TO WARN OF PRINTER PROBLEM.
8. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF THE CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
10. DELETED.
11. DELETED.
12. FOR FLOOR CLEANING.
13. GRAINGER MODEL NO. 75LJ036AA OR EQUIVALENT.
14. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
15. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.
16. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.

HOLDS:

2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"B" BAG WEIGH & METAL DETECT

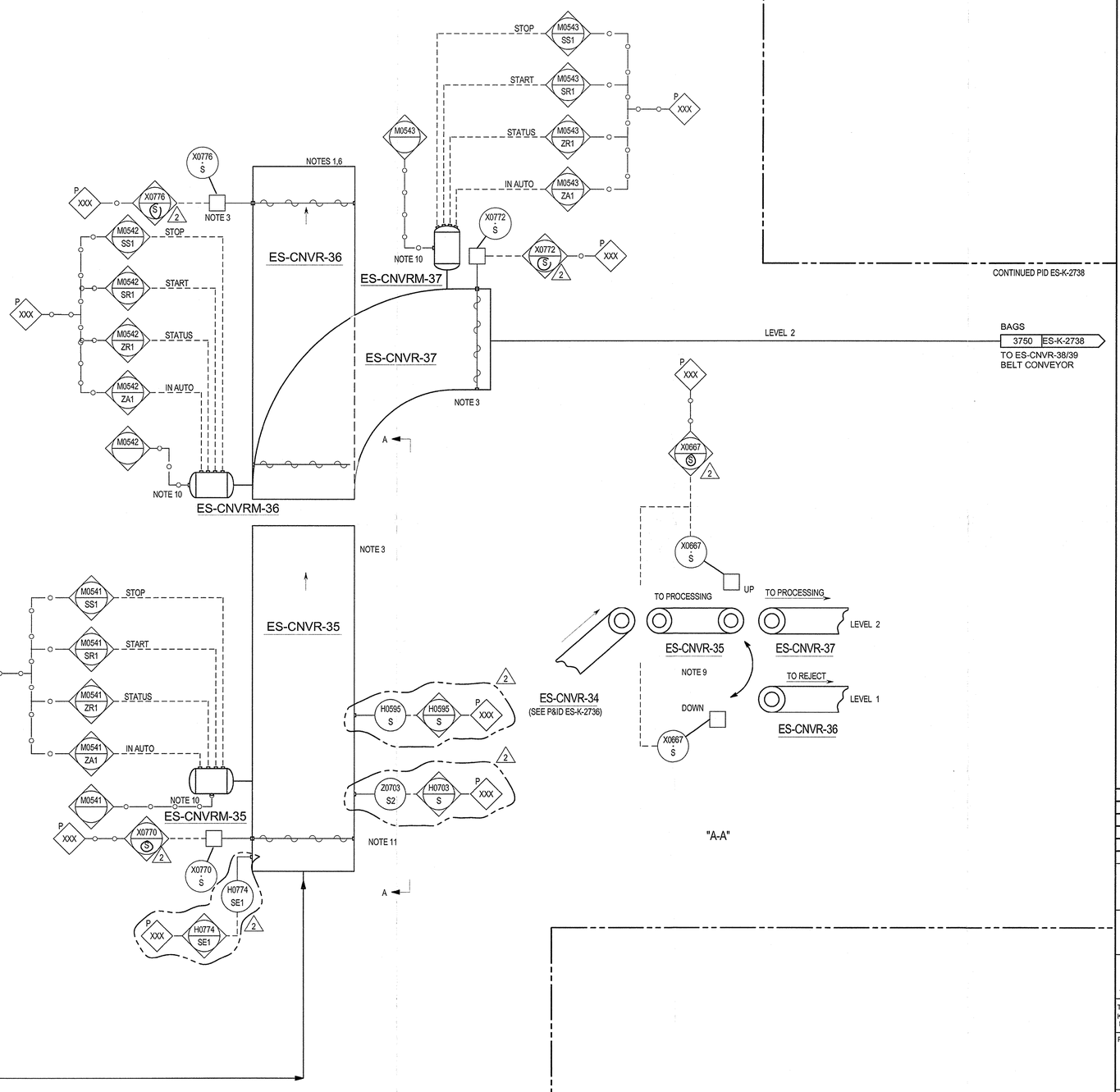
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2736	1 OF 1	2

ES-CNVR-35
Service: TILT REJECT CONVEYOR

ES-CNVR-36
Service: POWERED ROLLER REJECT CONVEYOR

ES-CNVR-37
Service: SLIDING BELT CONVEYOR-90° CURVE

CONTINUED PID ES-K-2736



NOTES:

1. ALLOW SPACE FOR HOLD-UP OF 6 REJECT BAGS.
2. PLC TO INTERFACE WITH VENDOR CONTROLS AND OPERATE REJECT TILT CONVEYOR ES-CNVR-35 IF A REJECT SIGNAL IS SENT FROM THE METAL DETECTOR OR CHECK WEIGHER.
3. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. DELETED.
6. REJECT BAGS ARE MOVED TO PELLET RECYCLE SYSTEM BY FORKLIFT.
7. DELETED.
8. LOCAL HAND SWITCH FOR ES-V0667-V.
9. PROVIDE GUARDING TO PREVENT PERSONNEL ACCESS TO HAZARD AREA AROUND ES-CNVR-35.
10. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
11. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
12. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"B" BAG LINE REJECT SYSTEM

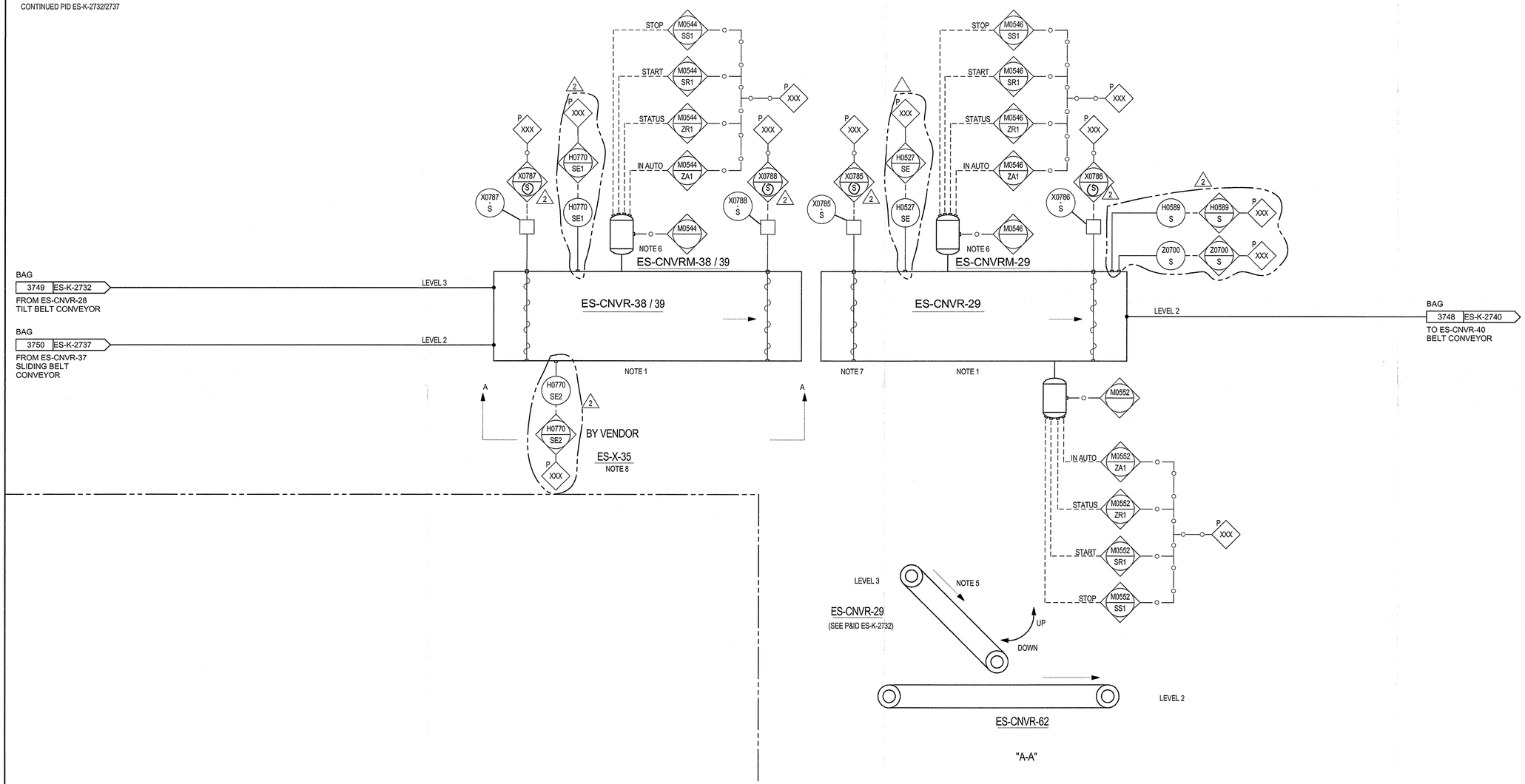
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ES-K-2737	1 OF 1	2

ES-CNVR-38
Service: BELT CONVEYOR

ES-CNVR-29
Service: TILTING BELT CONVEYOR

CONTINUED PID ES-K-2732/2737



CONTINUED PID ES-K-2740

NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
3. DELETED.
4. DELETED.
5. PROVIDE GUARDING TO PREVENT PERSONNEL ACESS TO HAZARD AREA AROUND ES-CNVR-29.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
7. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
8. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DBE	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"B" BAG LINE CONVEYORS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2738	1 OF 1	2

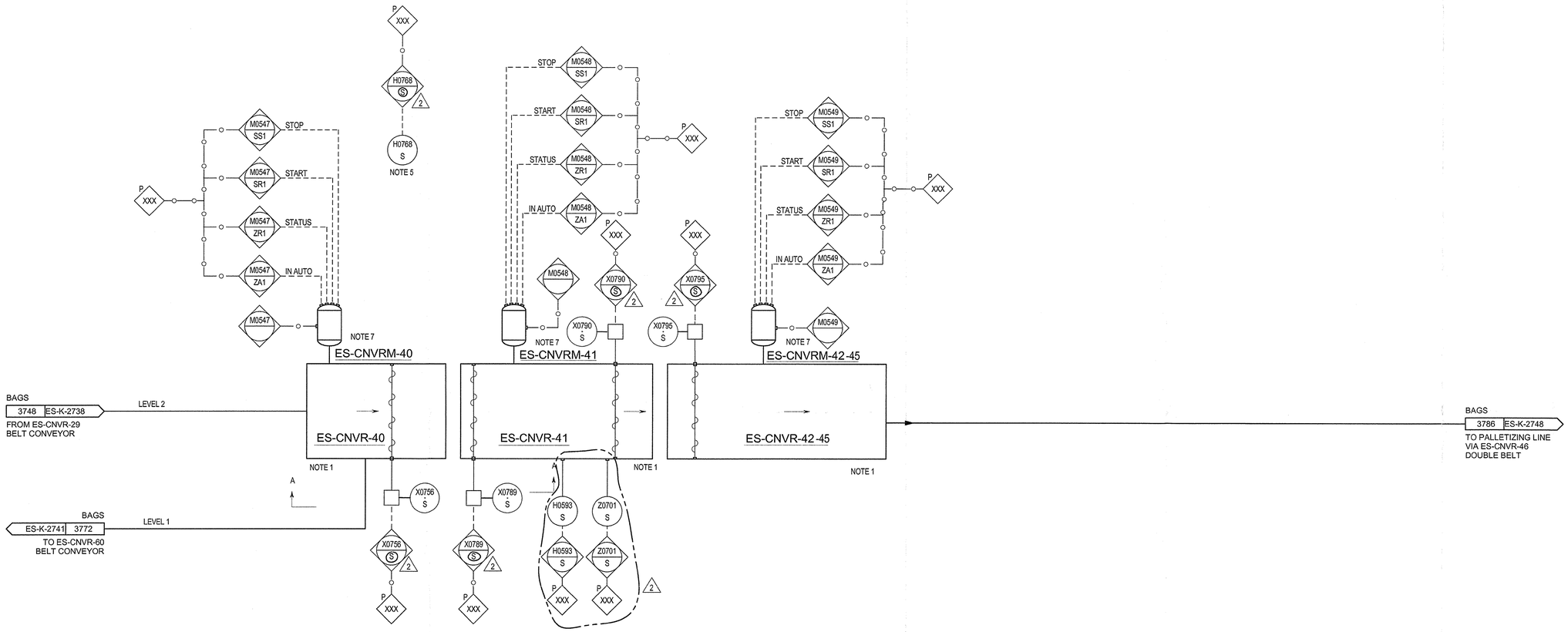
ES-CNVR-40
Service: BELT CONVEYOR

ES-CNVR-41
Service: BELT CONVEYOR

ES-CNVR-42
Service: BELT CONVEYOR

CONTINUED PID ES-K-2738/2741

CONTINUED PID ES-K-2748



BY VENDOR

ES-X-35

NOTE 8

CONTINUED PID ES-K-2738/2741

CONTINUED PID ES-K-2748

NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
3. DELETED.
4. DELETED.
5. LOCAL HAND SWITCH FOR ES-V0768-V.
6. PROVIDE GAURDING TO PREVENT PERSONNEL ACCESS TO HAZARD AREA AROUND ES-CNVR-41.
7. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
8. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	RAF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
BAGS TO PALLETIZING

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2740	1 OF 1	2

ES-CNVR-62
Service: SLIDING BELT CONVEYOR

CONTINUED PID ES-K-2740

CONTINUED PID ES-K-2742



BY VENDOR

ES-X-35

NOTE 7

CONTINUED PID ES-K-2740

CONTINUED PID ES-K-2742

NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
3. DELETED.
4. DELETED.
5. PROVIDE GUARDING TO PREVENT PERSONNEL ACESS TO HAZARD AREA AROUND ES-CNVR-41.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
7. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	[illegible]	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
BAGS TO "A" / "B" CRATING LINES

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2741	1 OF 1	2

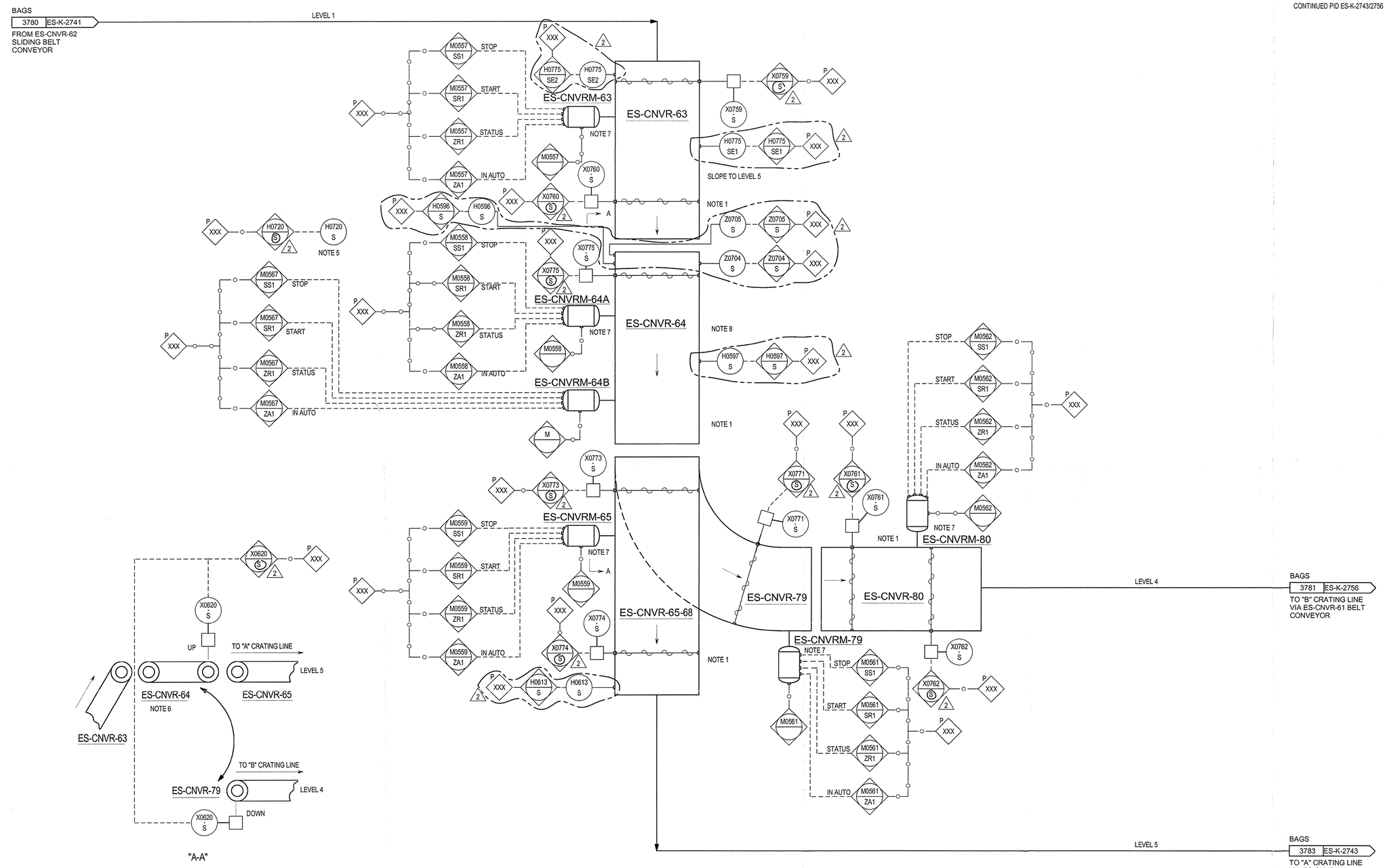
ES-CNVR-63
Service: BELT CONVEYOR

ES-CNVR-64
Service: TILT BELT CONVEYOR

ES-CNVR-65-68
Service: BELT CONVEYOR

ES-CNVR-79
Service: SLIDING BELT CONVEYOR-90° CURVE

ES-CNVR-80
Service: BELT CONVEYOR



CONTINUED PID ES-K-2741

CONTINUED PID ES-K-2743/2756

NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
3. DELETED.
4. DELETED.
5. LOCAL HAND SWITCH FOR ES-V0720-V.
6. PROVIDE GUARDING TO PREVENT PERSONNEL ACESS TO HAZARD AREA AROUND ES-CNVR-64.
7. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
8. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
9. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
BAGS TO "A" / "B" CRATING LINES

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2742	1 OF 1	2

ES-CNVR-69
Service: SLIDING BELT CONVEYOR-90° CURVE

ES-CNVR-70
Service: BELT CONVEYOR

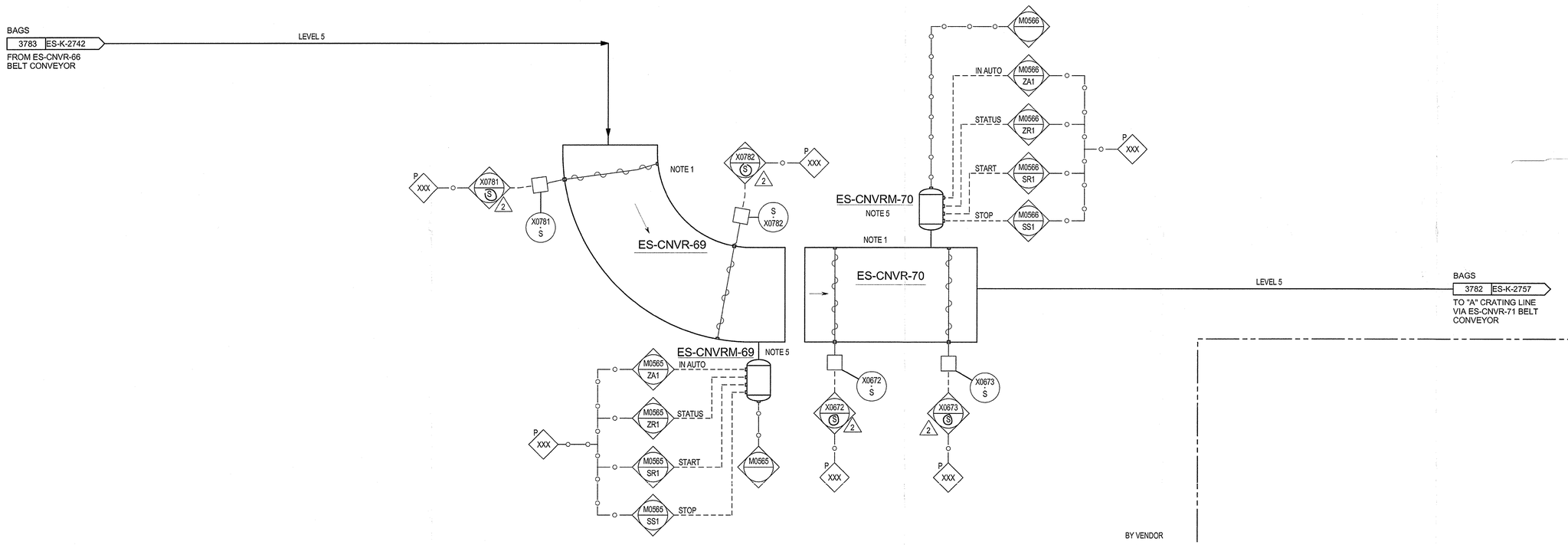
NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
3. DELETED.
4. DELETED.
5. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
6. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

CONTINUED PID ES-K-2757



CONTINUED PID ES-K-2742

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
BAGS TO "A" CRATING LINES

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2743	1 OF 1	2

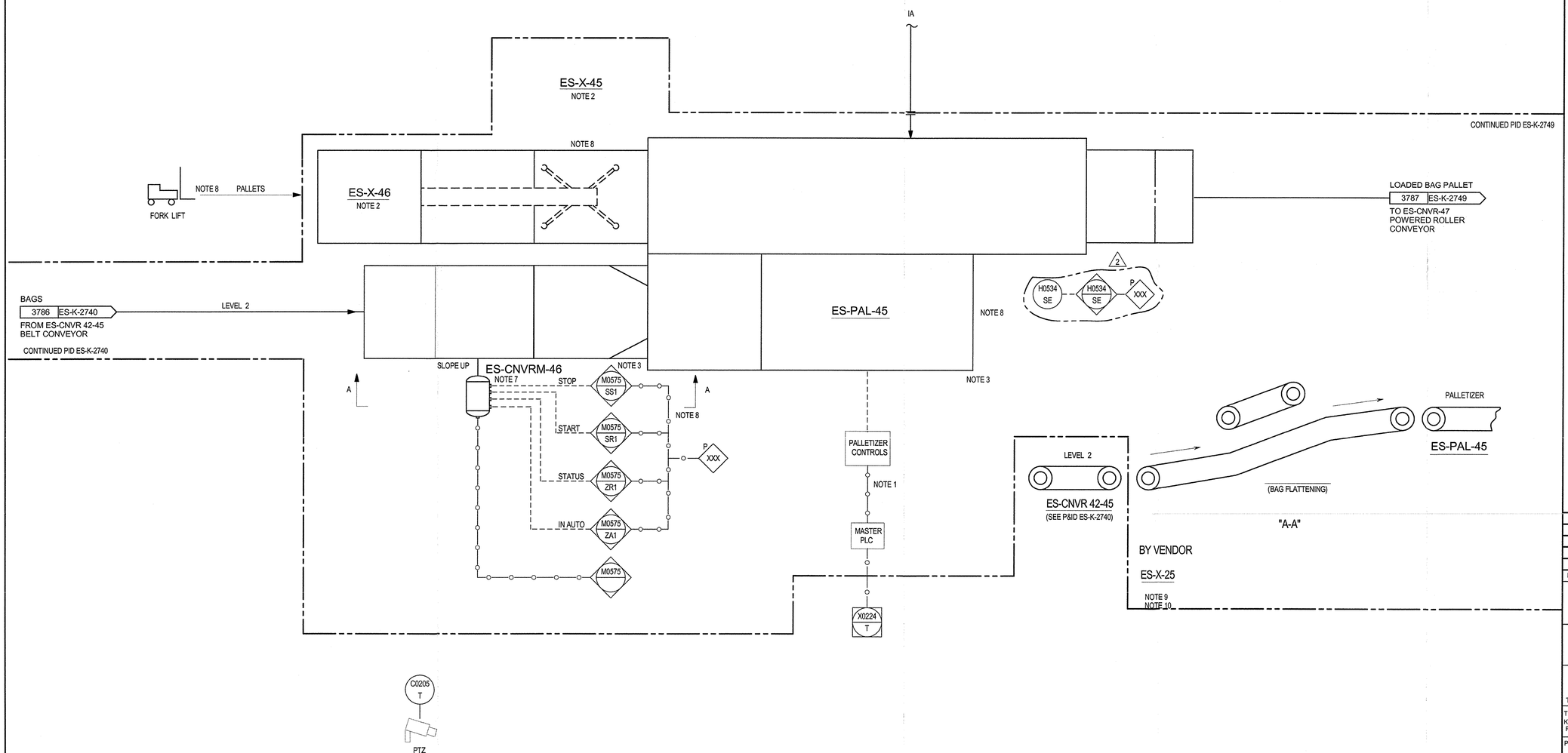
ES-X-25
PALLETIZER PACKAGE

ES-X-45 NOTE 2
Service: SLIP SHEET DISPENSER
CAP.: 1 SHEET/MIN

ES-X-46 NOTE 2
Service: BAG LINE PALLET DISPENSER
CAP.: 25 KG, 1 PALLET/MIN

ES-CNVR-46
Service: DOUBLE BELT CONVEYOR/FLATTENER

ES-PAL-45
Service: PALLETIZER
CAP.: 800 BAGS/H; 20.000 KG/H
25 KG BAG X 5 BAG/LAYER, 9 LAYER/PALLET



NOTES:

1. ALL CONTROLS FOR PALLETIZER, PALLET DISPENSER AND SLIP SHEET DISPENSER INCLUDED IN A SINGLE PLC.
2. SLIP SHEET DISPENSER AND BAG LINE PALLET DISPENSER ARE INTEGRAL PART OF PALLETIZER.
3. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. DELETED.
6. DELETED.
7. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
8. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
9. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.
10. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
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Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PALLETIZER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2748	1 OF 1	2

ES-CNVR-47
Service: POWERED ROLLER CONVEYOR

ES-CNVR-48
Service: POWERED ROLLER CONVEYOR

ES-SWR-49
Service: PALLET WRAPPER
CAP.: 25 kg/BAG x 800 BAGS/h
25 kg BAG x 45 BAGS/PALLET

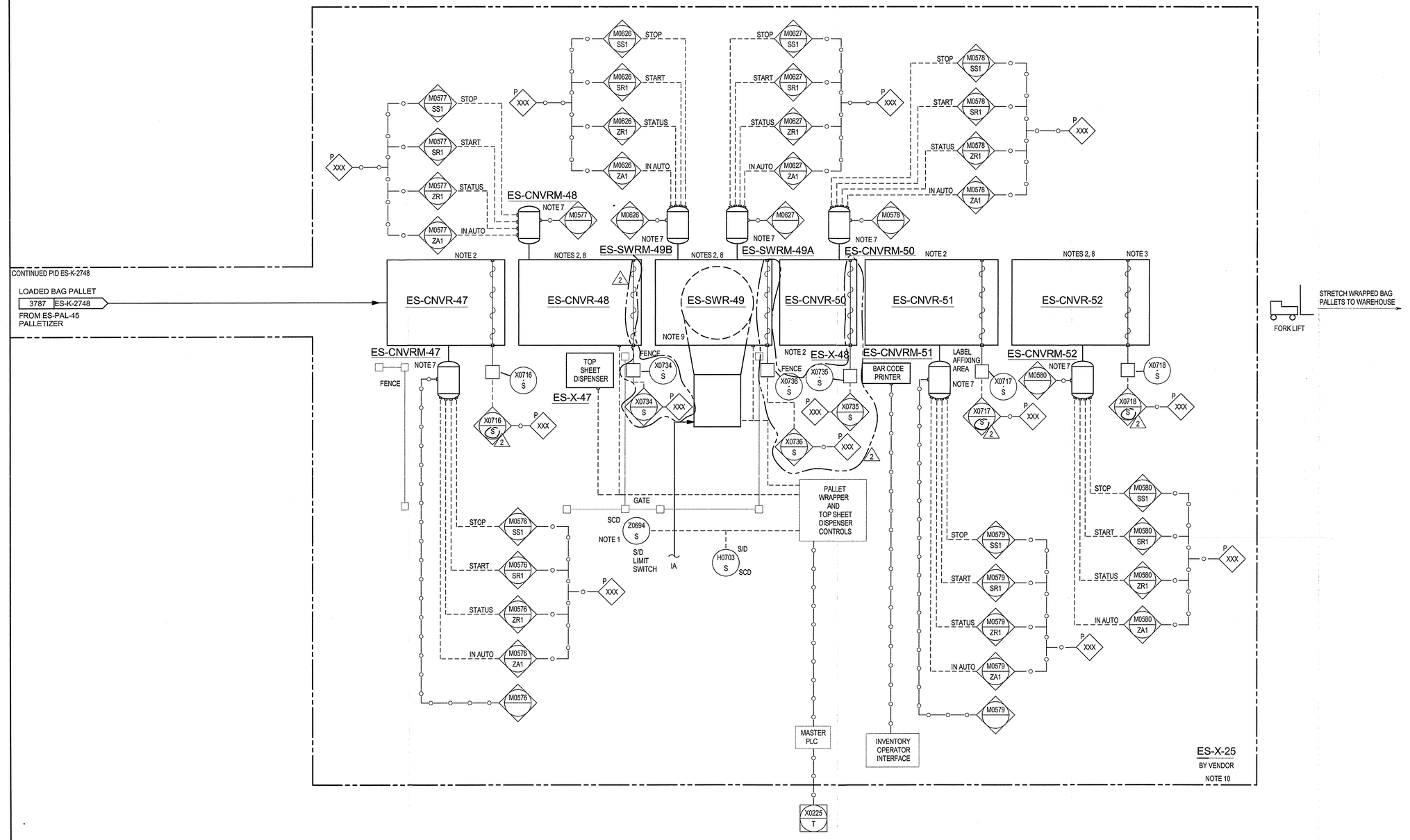
ES-CNVR-50
Service: POWERED ROLLER CONVEYOR

ES-CNVR-51
Service: POWERED ROLLER CONVEYOR

ES-CNVR-52
Service: POWERED ROLLER CONVEYOR

ES-X-47
Service: TOP SHEET DISPENSER
CAP.: 1 SHEET/min

ES-X-48
Service: BAR CODE PRINTER



NOTES:

1. VENDOR SUPPLIED SAFETY SHUTDOWN SYSTEM GUARDS WITH LIMIT SWITCHES AT OPENINGS.
2. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
3. LINE TO HAVE CAPABILITY TO ACCUMULATE 4 PALLETS.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. DELETED.
6. DELETED.
7. MOTOR WITH STAR/STOP LOCAL PUSH BUTTON.
8. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
9. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.
10. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DBF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
LOADED PALLET

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2749	1 OF 1	2

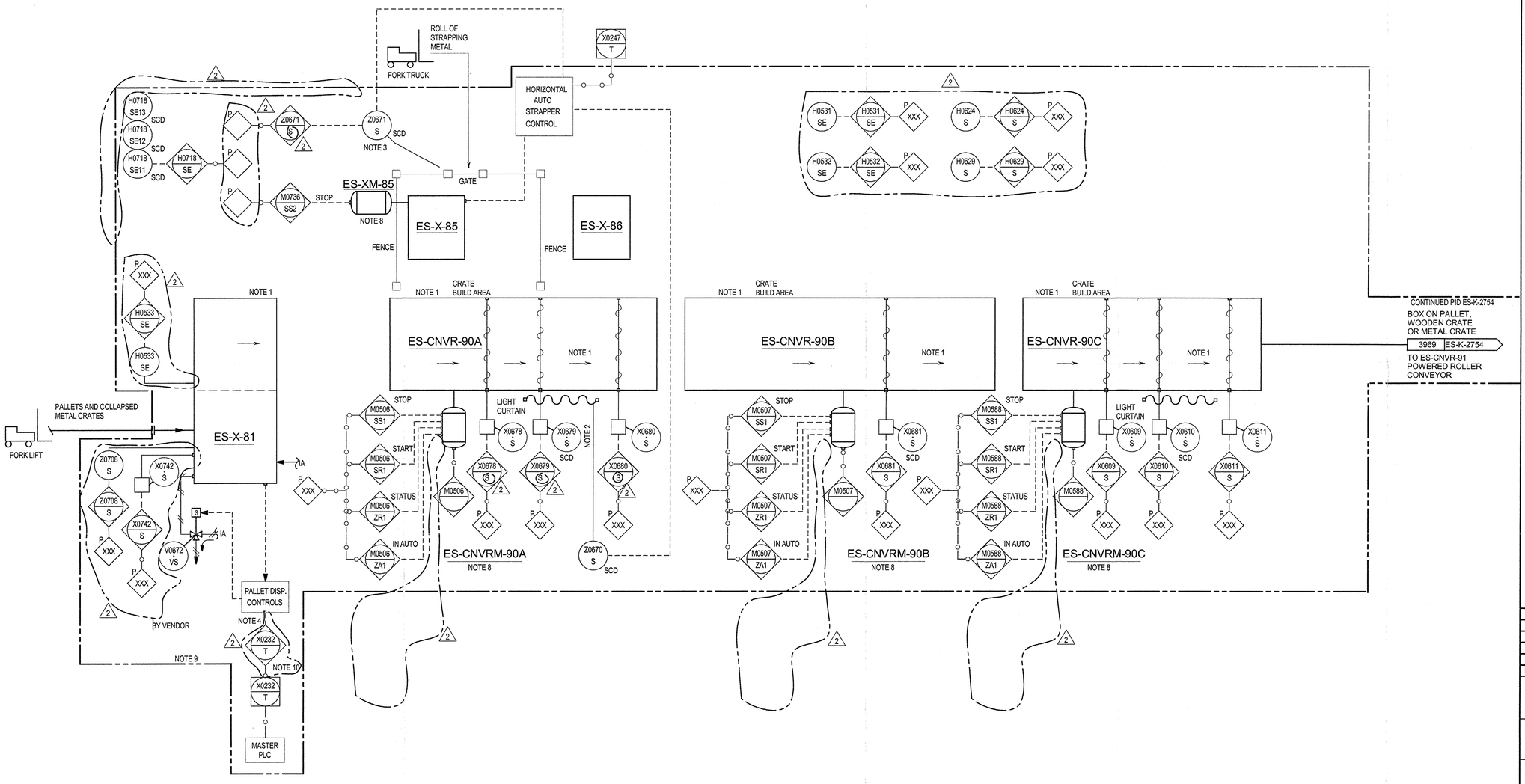
ES-X-30
Service: BAG LOADING ROBOT PACKAGE

ES-X-81
Service: PALLET DISPENSER
CAP.: 2.300 kg x 1 PALLET/min

ES-CNVR-90A / B / C
Service: POWERED SLAT CONVEYOR

ES-X-85
Service: HORIZONTAL AUTO STRAPPER
CAP.: 0.5 CONTAINERS/min

ES-X-86
Service: MANUAL LINER DISPENSER WITH BLOWING DEVICE
CAP.: 0.5 CONTAINERS/min



NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
2. SAFETY CRITICAL LIGHT CURTAIN SWITCH TO SHUT DOWN AUTO STRAPPER IN CASE LIGHT CURTAIN IS BROKEN BY SOMEONE GETTING TOO CLOSE.
3. SAFETY CRITICAL DOOR SWITCH ON GATE OF FENCE FOR AUTO STRAPPER WHICH SHUTS DOWN IN CASE GATE IS OPEN WHEN STRAPPER IN OPERATION.
4. ALARMS IF THE QUANTITY OF PALLETS/CRATES BECOMES LOW.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
6. DELETED.
7. DELETED.
8. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
9. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.
10. HORN TO SOUND AND LIGHT TO LIGHT UP IF ES-X0232T ACTIVATED. 2

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
BOX / CRATE ASSEMBLY

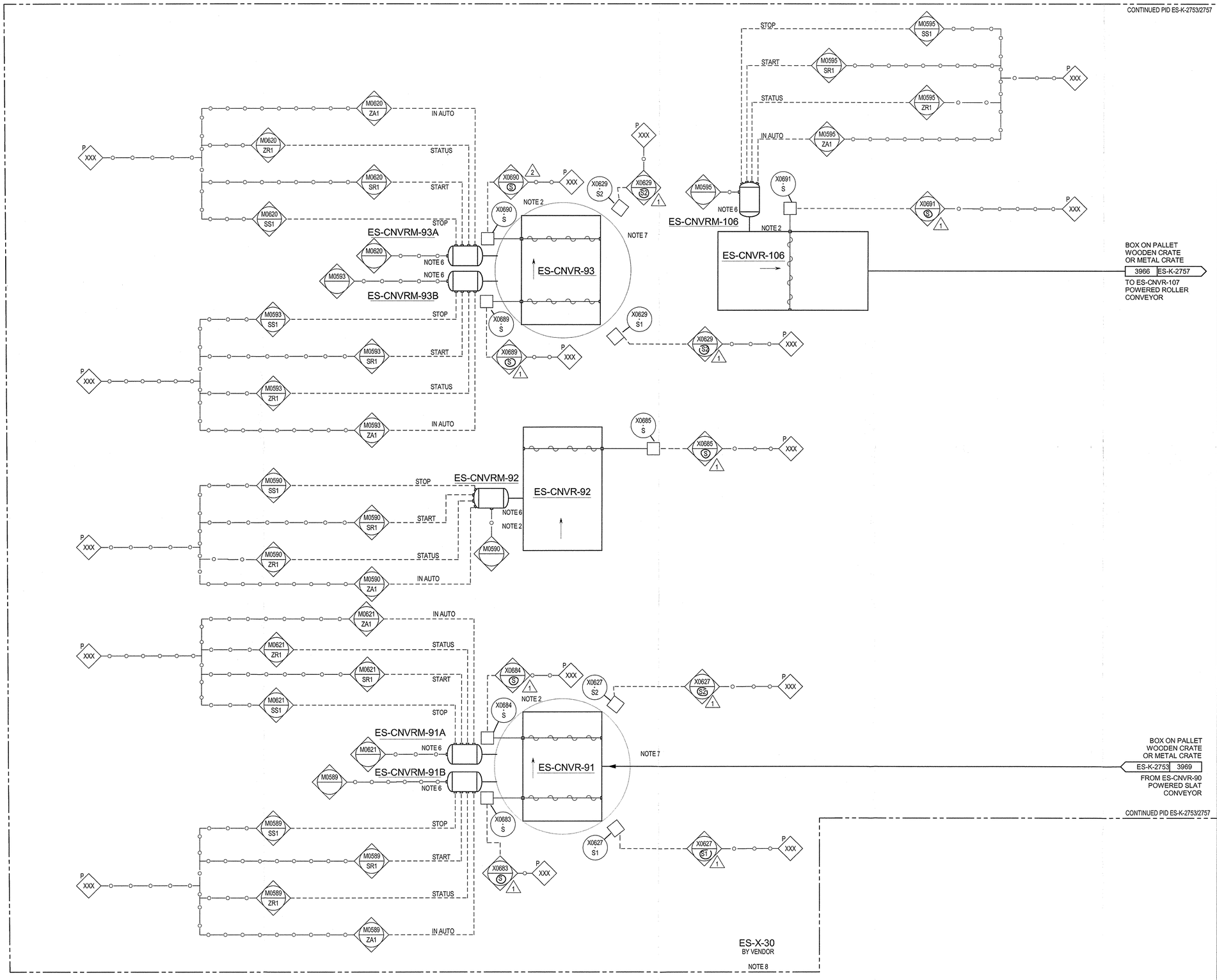
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2753	1 OF 1	2

ES-CNVR-91
Service: POWERED ROLLER CONVEYOR ON TURNTABLE

ES-CNVR-92
Service: POWERED ROLLER CONVEYOR

ES-CNVR-93
Service: POWERED ROLLER CONVEYOR ON TURNTABLE

ES-CNVR-106
Service: POWERED ROLLER CONVEYOR



NOTES:

1. DELETED.
2. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
4. DELETED.
5. DELETED.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
7. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
8. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	ORF	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
CRATING LINE DISTRIBUTION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

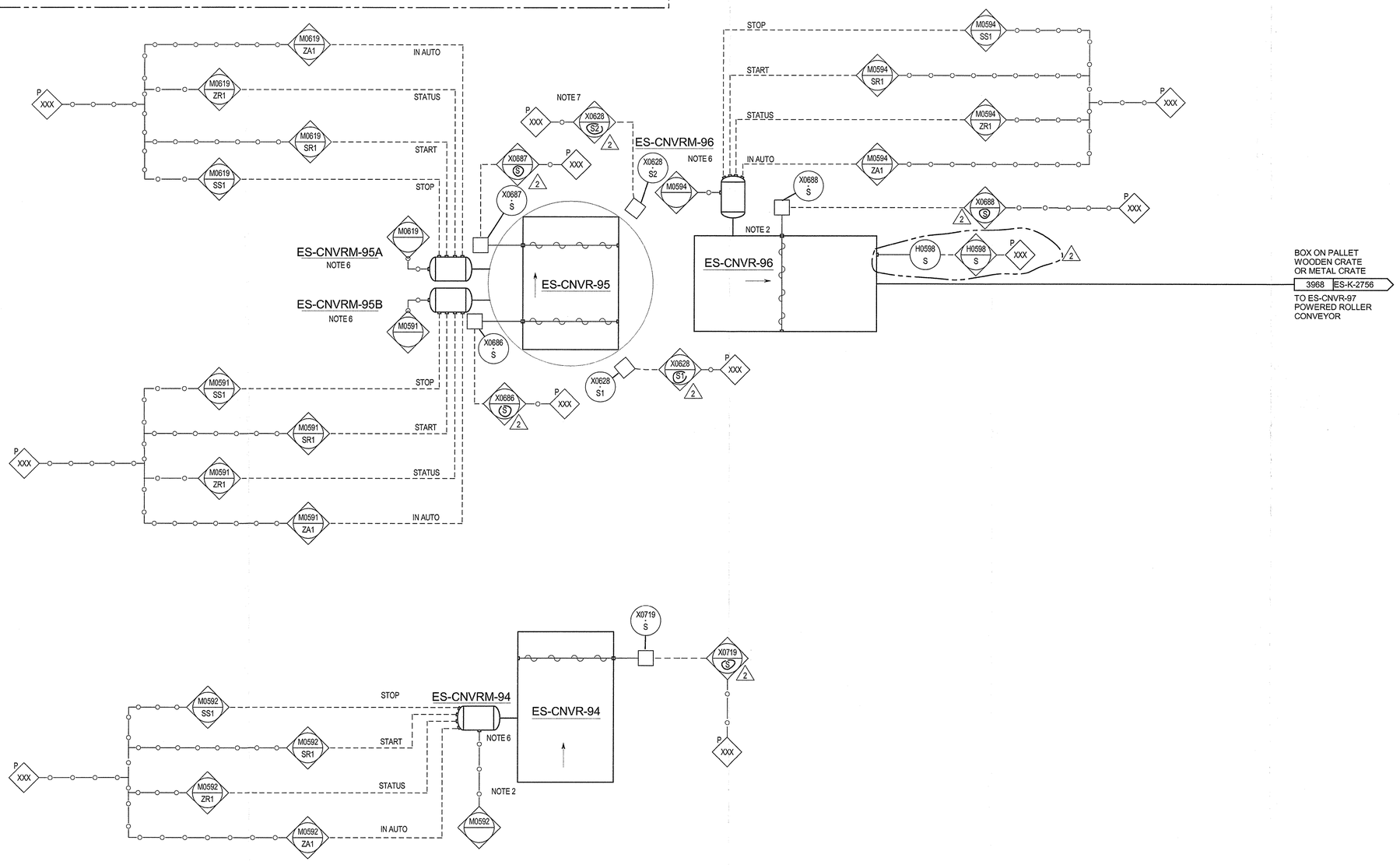
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2754	1 OF 1	2

ES-CNVR-94
Service: POWERED ROLLER CONVEYOR

ES-CNVR-95
Service: POWERED ROLLER CONVEYOR ON TURNTABLE

ES-CNVR-96
Service: POWERED ROLLER CONVEYOR

CONTINUED PID ES-K-2756



ES-X-30
BY VENDOR

NOTE 8

CONTINUED PID ES-K-2756

NOTES:

1. NOT USED.
2. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
4. DELETED.
5. DELETED.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
7. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
8. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	RRF	RRF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RRF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

شركة الجبيل للبتروكيماويات
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
CRATING LINE DISTRIBUTION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ES-K-2754A	1 OF 1	2

ES-CNVR-97
Service: POWERED ROLLER CONVEYOR

ES-CNVR-99
Service: POWERED ROLLER LOADING CONVEYOR

ES-CNVR-101
Service: POWERED ROLLER CONVEYOR

ES-CNVR-103
Service: POWERED ROLLER CONVEYOR

ES-ROBM-30 △2
Service: LINE B BAG LOADING ROBOT
CAP: 7 BAGS/mm

ES-CNVR-82
Service: DELIVERY CONVEYOR

ES-CNVR-84
Service: LINE B GRAVITY CONVEYOR

ES-CNVR-84
Service: LINE B GRAVITY CONVEYOR

ES-CNVR-98
Service: POWERED ROLLER CONVEYOR

ES-WS-52
Service: LINE B LOAD/WEIGH SCALE

ES-CNVR-102
Service: POWERED ROLLER CONVEYOR

ES-CNVR-104
Service: POWERED ROLLER CONVEYOR

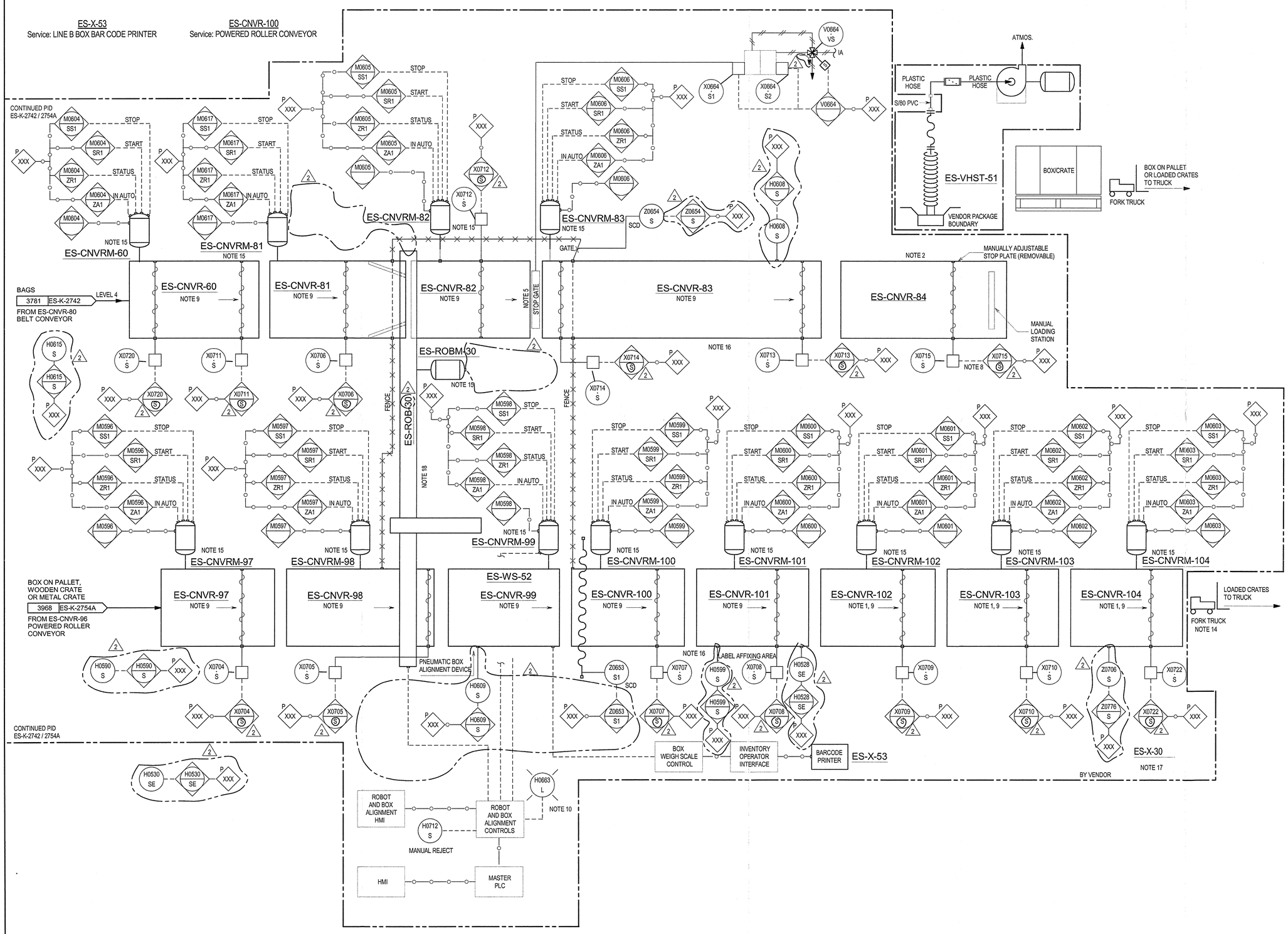
ES-CNVR-81
Service: BELT CONVEYOR

ES-CNVR-83
Service: BELT CONVEYOR

ES-VHST-51
Service: LINE B VACUUM HOIST

ES-X-53
Service: LINE B BOX BAR CODE PRINTER

ES-CNVR-100
Service: POWERED ROLLER CONVEYOR



NOTES:

1. CONVEYOR FOR ACCUMULATION OF CRATES.
2. MANUAL LOADING STATION TO BE ADJUSTABLE TO 1150 mm +/- 250 mm RANGE FOR DIFFERENT BOX HEIGHTS. A MANUALLY REMOVABLE STOP PLATE IS REQUIRED TO STOP BAGS WHEN USING VACUUM ASSISTED LIFTING DEVICE TO LOAD BOXES.
3. THE HUMAN MACHINE INTERFACE TO BE A PC EQUIPPED WITH SOFTWARE TO PRINT BOX LABELS. SOFTWARE SHOULD BE CAPABLE OF ALSO SENDING OUTPUT TO PRINTER FOR OTHER ROBOT LINE.
4. DELETED.
5. BAG STOP GATE COMES FROM UNDERNEATH.
6. DELETED. △2
7. SAFETY CRITICAL DOOR SWITCH ON GATE OF FENCE FOR UNDERSIDE OF ROBOT LOADING SYSTEM, SHUTS DOWN IN CASE THE GATE OPENED WITH ROBOT OPERATING.
8. JB CONNECTION FOR ES-X0715-S ON ES-CNVR-112 FRAME VIA FLEXIBLE WIRING.
9. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
10. HORN TO SOUND AND LIGHT TO LIGHT UP IF ES-Z0654-S (GATE OPEN) OR ES-Z0653-S/ Z0667-S (LIGHT CURTAIN BREECHED) ACTIVATED.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
12. DELETED.
13. DELETED.
14. PHYSICAL STOP AT END OF CONVEYOR FOR TRUCK AT SIDE EMBEDDED IN FLOOR.
15. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
16. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
17. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.
18. A DEDICATED HMI WILL BE LOCATED AT FIELD FOR THIS EQUIPMENT.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	~~DRS~~	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"B" LINE BAG LOADING ROBOT

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2756	1 OF 1	2

ES-CNVR-60
Service: BELT CONVEYOR

ES-CNVR-72
Service: DELIVERY CONVEYOR

ES-CNVR-73
Service: BELT CONVEYOR

ES-CNVR-74
Service: GRAVITY CONVEYOR

ES-CNVR-109
Service: POWERED ROLLER LOADING CONVEYOR

ES-CNVR-112
Service: POWERED ROLLER CONVEYOR

ES-CNVR-107
Service: POWERED ROLLER CONVEYOR

ES-X-33
Service: LINE A BOX BAR CODE PRINTER

ES-ROB-50
Service: LINE A BAG LOADING ROBOT
CAP.: 7 barg/min:

ES-CNVR-110
Service: POWERED ROLLER CONVEYER

ES-CNVR-113
Service: POWERED ROLLER CONVEYOR

ES-CNVR-108
Service: POWERED ROLLER CONVEYOR

ES-WS-32
Service: LINE A LOAD/WEIGH SCALE

ES-CNVR-111
Service: POWERED ROLLER CONVEYOR

ES-VHST-31
Service: LINE A VACUUM HOIST

ES-CNVR-114
Service: POWERED ROLLER CONVEYOR

NOTE 3
HMI
MASTER PLC
ROBOT AND BOX ALIGNMENT HMI
INVENTORY OPERATOR INTERFACE
BARCODE PRINTER
ES-X-33
NOTE 9
H0662 L
MANUAL REJECT
H0713 S
ROBOT AND BOX ALIGNMENT CONTROLS
BOX WEIGH SCALE CONTROL
CONTINUED PID ES-K-2743 / 2754
PNEUMATIC BOX ALIGNMENT DEVICE
LABEL AFFIXING AREA
NOTE 16
SCD
WOODEN CRATE OR METAL CRATE
3966 ES-K-2754
FROM ES-CNVR-106 POWERED ROLLER CONVEYOR
LOADED CRATES TO TRUCK
FORK TRUCK
ES-CNVRM-107
ES-CNVRM-108
ES-CNVRM-109
ES-CNVRM-110
ES-CNVRM-111
ES-CNVRM-112
ES-CNVRM-113
ES-CNVRM-114
STOP
START
STATUS
IN AUTO
FENCE
ES-ROBM-50
ES-ROB-50
BAGS
3782 ES-K-2743
LEVEL 5
FROM ES-CNVR-70 BELT CONVEYOR
ES-CNVRM-60
ES-CNVRM-71
ES-CNVRM-72
ES-CNVRM-73
STOP GATE
GATE
MANUALLY ADJUSTABLE STOP PLATE (REMOVABLE)
MANUAL LOADING STATION
PTZ
ATMOS.
PLASTIC HOSE
S/80 PVC
ES-VHST-31
VENDOR PACKAGE BOUNDARY
BOX/CRATE
BOX ON PALLET OR LOADED CRATES TO TRUCK
FORK TRUCK
CONTINUED PID ES-K-2743 / 2754
ES-X-30
NOTE 17
BY VENDOR

NOTES:

1. CONVEYORS FOR ACCUMULATION OF 3 CRATES.
2. MANUAL LOADING STATION ADJUSTABLE TO 1150 mm+/-250 mm RANGE FOR DIFFERENT BOX HEIGHTS. A MANUALLY REMOVABLE STOP PLATE IS REQUIRED TO STOP BAGS WHEN USING VACUUM ASSISTED LIFTING DEVICE TO LOAD BOXES.
3. THE HUMAN MACHINE INTERFACE TO BE A PC EQUIPPED WITH SOFTWARE TO PRINT BOX LABELS. SOFTWARE SHOULD BE CAPABLE OF ALSO SENDING OUTPUT TO PRINTER FOR OTHER ROBOT LINE.
4. DELETED.
5. SAFETY CRITICAL LIGHT CURTAIN SWITCH TO SHUTDOWN ROBOT IN CASE GETTING TOO CLOSE TO OPERATING ROBOT.
6. SAFETY CRITICAL DOOR SWITCH ON GATE OF FENCE FOR UNDERSIDE OF ROBOT LOADING SYSTEM, SHUTS DOWN IN CASE THE GATE OPENED WITH ROBOT OPERATING.
7. JB CONNECTION FOR ES-X0703-S ON ES-CNVR-74 FRAME VIA FLEXIBLE WIRING.
8. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY CONVEYOR STOPPAGE.
9. HORN TO SOUND AND LIGHT TO LIGHT UP IF ES-Z0652-S (GATE OPEN) OR ES-Z0651-S/ Z0666-S (LIGHT CURTAIN BREECHED) ACTIVATED.
10. BAG STOP GATE COMES FROM UNDERNEATH.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
12. DELETED.
13. DELETED.
14. PHYSICAL STOP AT THE END OF CONVEYOR FOR TRUCK STOP AT SIDE EMBEDDED IN FLOOR.
15. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
16. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
17. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.
18. A DEDICATED HMI WIL BE LOCATED AT FIELD FOR THIS EQUIPMENT.

HOLDS:

32. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	~~RF~~	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
"A" LINE BAG LOADING ROBOT

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2757	1 OF 1	2

ES-CNVR-120
Service: POWERED ROLLER CONVEYOR

ES-CNVR-121
Service: POWERED ROLLER CONVEYOR

ES-CNVR-122
Service: POWERED ROLLER CONVEYOR

ES-CNVR-123
Service: POWERED ROLLER CONVEYOR

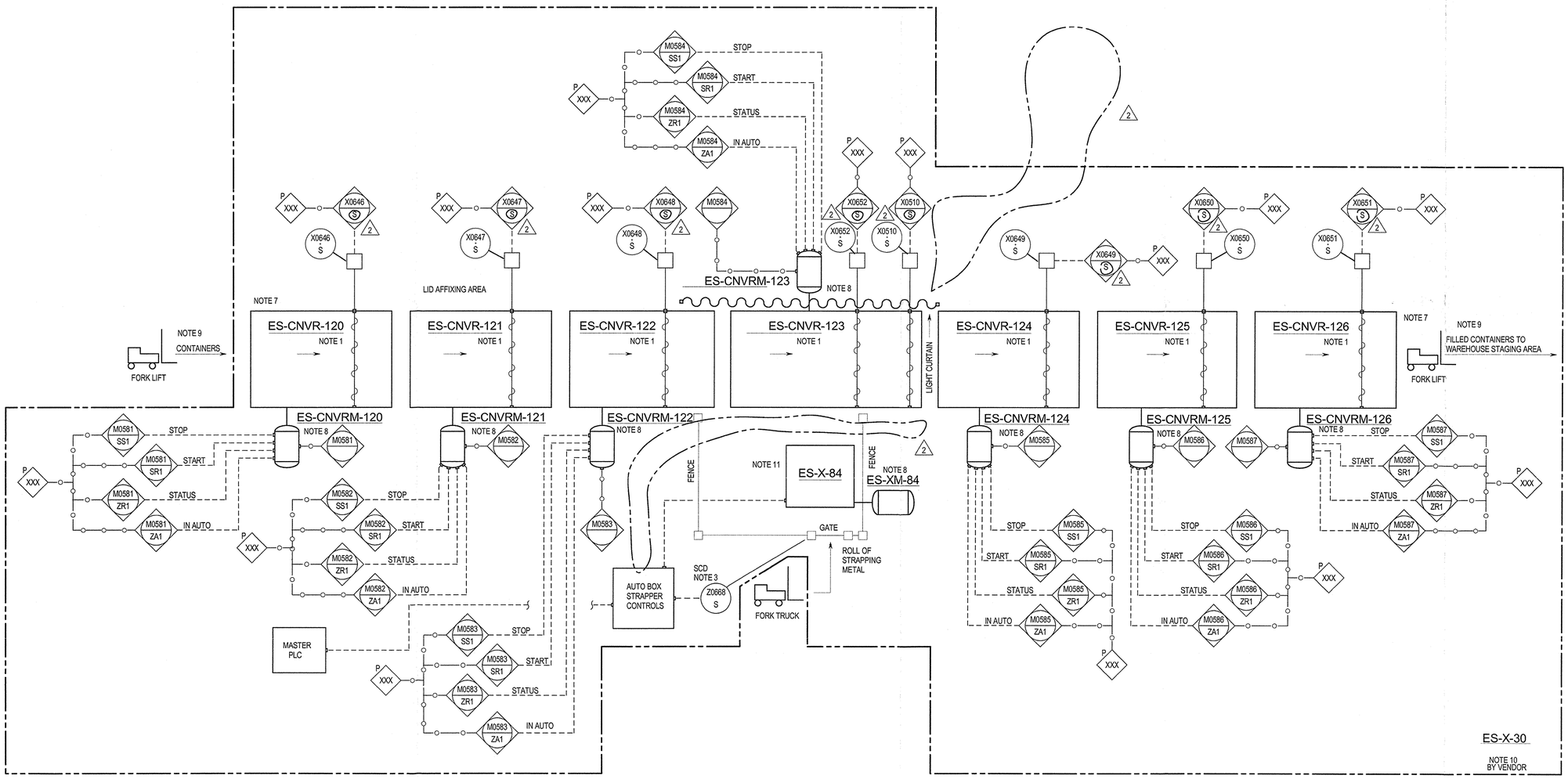
ES-X-84
Service: AUTO BOX STRAPPER
CAP.: 0.5 CONTAINERS/min

ES-X-30
Service: BAG LOADING ROBOT PACKAGE

ES-CNVR-124
Service: POWERED ROLLER CONVEYOR

ES-CNVR-125
Service: POWERED ROLLER CONVEYOR

ES-CNVR-126
Service: POWERED ROLLER CONVEYOR



NOTES:

1. VENDOR SUPPLIED SAFETY CRITICAL PULL CORD ON EACH OPERATOR ACCESSIBLE SIDE OF CONVEYOR FOR EMERGENCY STOPPAGE.
2. DELETED.
3. SAFETY CRITICAL DOOR SWITCH ON GATE OF FENCE FOR AUTO STRAPPER WHICH SHUTS DOWN IN CASE GATE IS OPEN WHEN STRAPPER IN OPERATION.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
5. DELETED.
6. DELETED.
7. CRATES PLACED ON CONVEYOR FROM SIDE PROVIDE FOR TRUCK STOP EMBEDDED IN THE FLOOR.
8. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
9. PROTECTED WITH FENCE WITH INTERLOCKED DOOR.
10. A MAIN HMI WILL BE LOCATED AT FIELD FOR PACKAGES ES-X-20/25/30/35.
11. A DEDICATED HMI WIL BE LOCATED AT FIELD FOR THIS EQUIPMENT.

HOLDS:
2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	~~DRS~~	RAF
1	10/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

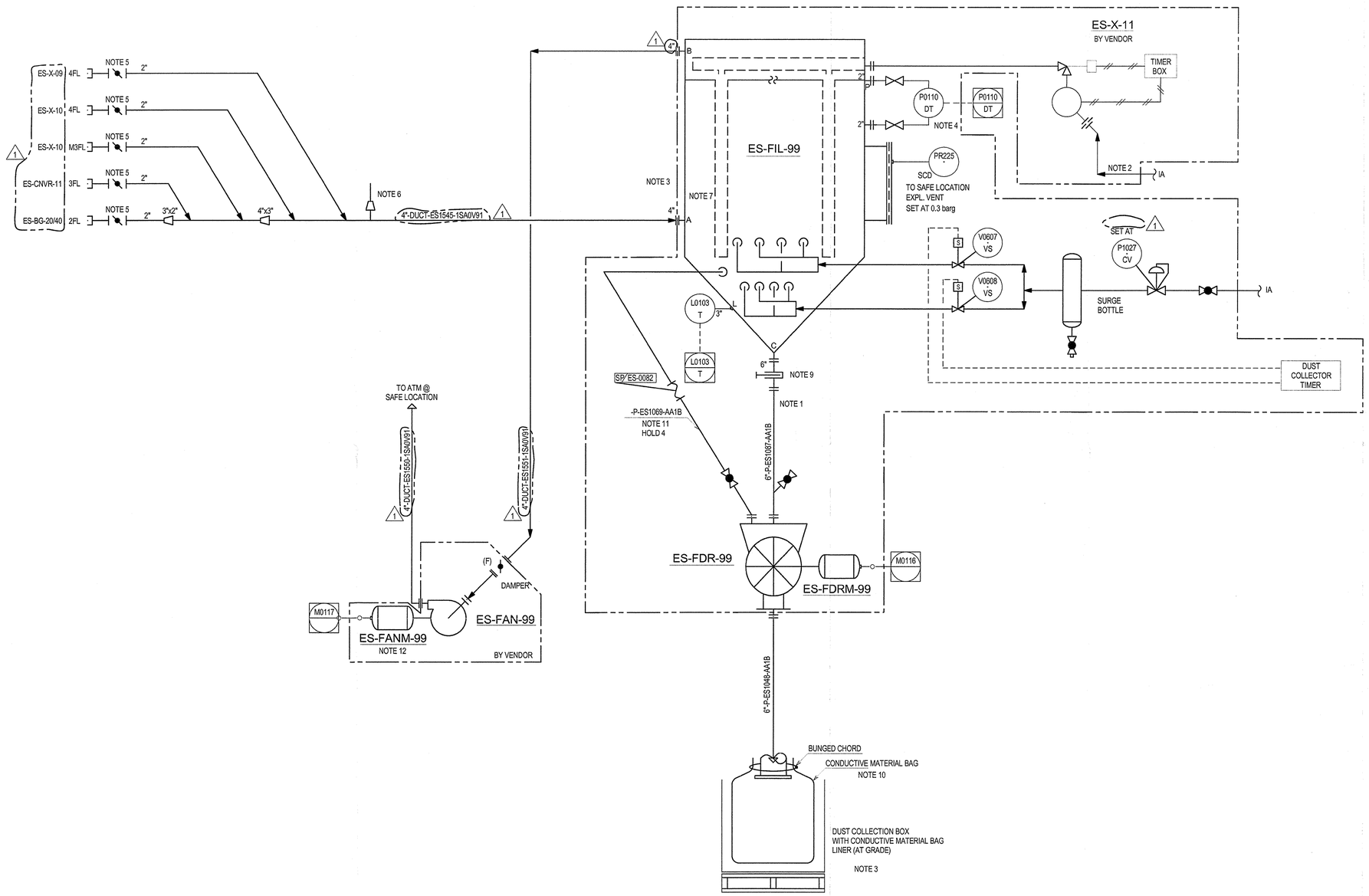
TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
CRATE CLOSING AND STRAPPING

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2758	1 OF 1	2

ES-X-11
Service: CENTRAL VACUUM DUST COLLECTOR PACKAGE

ES-FIL-99
Service: CENTRAL VACUUM DUST COLLECTOR
CAP.: 650 Sm^3/hr

ES-FDR-99
Service: DUST FILTER ROTARY VALVE
CAP: 60 Kg/h



ES-FAN-99
Service: CENTRAL VACUUM DUST COLLECTOR FAN
Capacity: 615.0 nm^3/hr (650 Sm3/hr) 1
Differential Press: 0.1 bar
Power Requirements:
Material of Construction: CS
D.P.: ±0.3 barg / D.T.: 90/0 °C

NOTES:

1. REMOVABLE SPOOL FOR CLEANOUT.
2. PROVIDE A VOLUME OF AIR CLOSE TO THE FILTER THAT HOLDS ENOUGH AIR AT 4 BARG TO OPERATE PULSE JET FOR ONE CYCLE AS THE PRESSURE IN THE STORAGE VOLUME LOWERS FROM 5.5 BARG TO 4 BARG.
3. ALL FACILITIES IN DUST HANDLING SERVICE TO BE GROUNDED AND BONDED.
4. BAG DIFFERENTIAL PRESSURE.
5. BUTTERFLY VALVES TO BE OPEN AND SHUT FOR OPTIMIZATION OF DUST COLLECTING.
6. BLEED IN ORIFICE TO MAINTAIN AIR VELOCITY IN AIR DUCT.
7. INLET BAFFLE.
8. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
9. TO BE ACCESSIBLE.
10. CONDUCTIVE MATERIAL BAGS MUST BE USED IN DUST COLLECTION SERVICE.
11. ASSURE FLEXIBLE HOSE CONNECTION ALLOWS GROUNDING AND BOUNDING STRATEGY.
12. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

4. LINE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
10. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

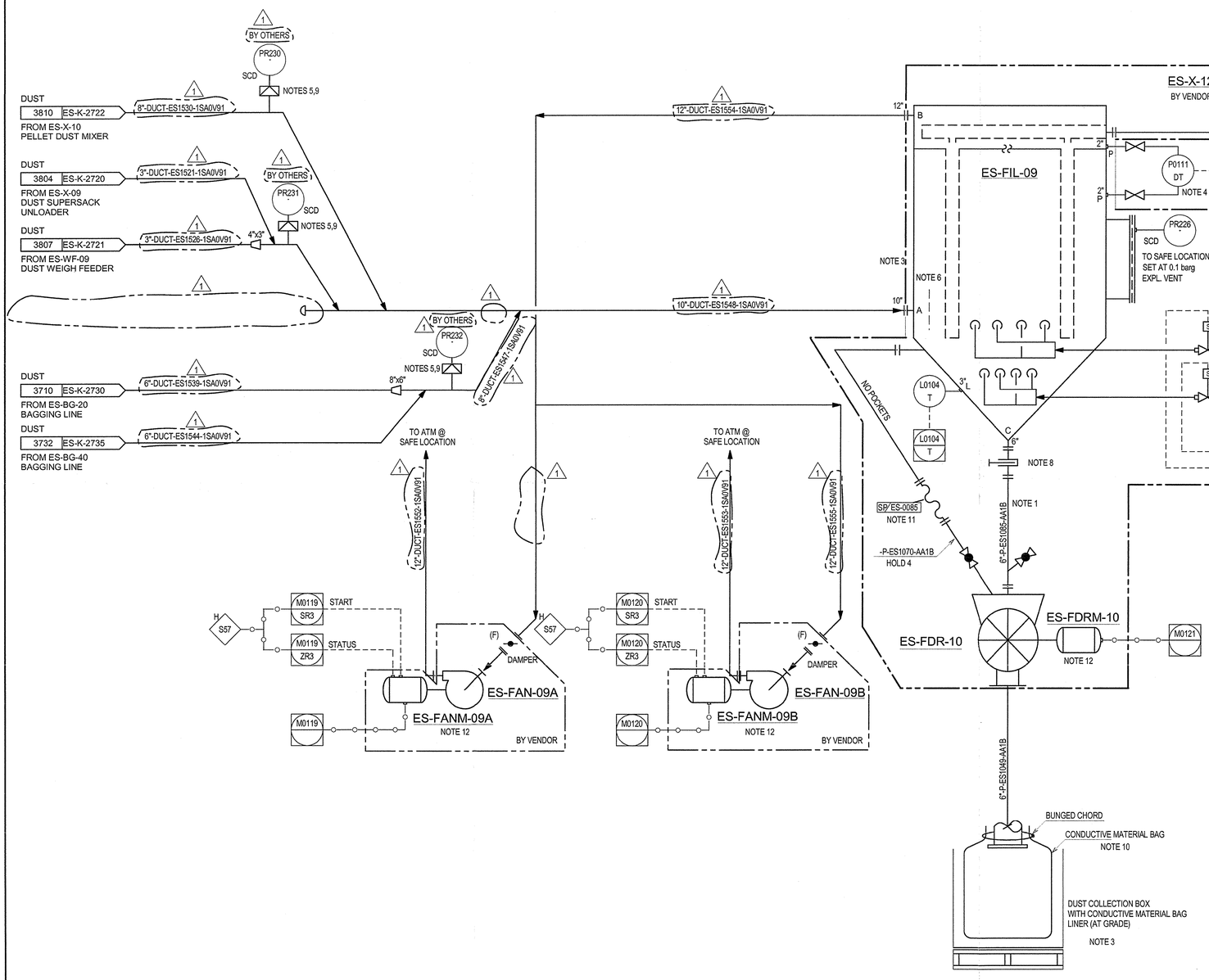
TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
CENTRAL DUST COLLECTOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ES-K-2770	1 OF 1	1

ES-X-12
Service: FINISHING DUST COLLECTOR PACKAGE

ES-FIL-09
Service: FINISHING PROCESS DUST COLLECTOR
CAP.: 3800 Sm^3/hr

ES-FDR-10
Service: DUST FILTER ROTARY VALVE
CAP: 100 Kg/h



ES-FAN-09A/ B
Service: FINISHING PROCESS DUST COLLECTOR FANS
Capacity: 3595.6 nm^3/hr (3800 Sm3/hr) 1
Differential Press: 0.1 bar
Power Requirements: 15 kW
Material of Construction: CS

NOTES:

1. REMOVABLE SPOOL FOR CLEANOUT.
2. PROVIDE A VOLUME OF AIR CLOSE TO THE FILTER THAT HOLDS ENOUGH AIR AT 4 barg TO OPERATE PULSE JET FOR ONE CYCLE AS THE PRESSURE IN THE STORAGE VOLUME LOWERS FROM 5.5 barg TO 4 barg.
3. ALL FACILITIES IN DUST HANDLING SERVICE ARE TO BE GROUNDED AND BONDED.
4. BAG DIFFERENTIAL PRESSURE.
5. EXPLOSION ISOLATION DEVICE.
6. INLET BAFFLE.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
8. TO BE ACCESSIBLE.
9. OUTLET TO BE LOCATED AT OUTSIDE OF BUILDING.
10. CONDUCTIVE MATERIAL BAGS MUST BE USED IN DUST COLLECTION SERVICE.
11. ASSURE FLEXIBLE HOSE CONNECTION ALLOWS GROUNDING AND BOUNDING STRATEGY.
12. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

4. LINE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PELLET DUSTING DUST COLLECTOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2771	1 OF 1	1

ES-TK-80
Service: F&P NON-OILY PROCESS WASTE WATER SUMP
SIZE: 6500mm x 6250mm x 2760mm 1

ES-HST-01
Service: HOIST FOR ES-TK-80 WIRE MESH BASKET
Capacity: HOLD 56
Driver: HOLD 56

F0010 T
F0010 T
1/2" 1/2"
F0010 E
2"-WW-ES1072-AA1E
PELLET WASTE WATER
3951 EZ-K-2975
TO BATTERY LIMIT

H S58
M0124 STOP SS3
M0124 START SR3
M0124 STATUS ZR3
M0125 STOP SS3
M0125 START SR3
M0125 STATUS ZR3
M0124
M0125

ES-HST-01 ELECTRICALLY POWERED TROLLEY
MECHANICAL STOPS (BOTH ENDS)
M ES-HSTM-01 ELECTRICALLY POWERED WINCH
UP / DOWN H0138 S (F)
FORWARD / BACK H0137 S (F)

2"-WW-ES1073-AA1E
2"-WW-ES1072-AA1E
1"-WW-ES1074-AA1E
4"-AV-ES1104-AA1E
4"-WW-ES1105-AA1E
HANDRAIL AROUND SUMP
3/4" F1001 RO
CSO
S58
L0099 T RADAR
L0099 T
VENT AT SAFE LOCATION
3/4" P1030 G
3/4" P1031 G
3/4"
2" ES-PM-80A NOTE 6 NOTE 7
2" ES-PM-80B NOTE 7
4" NOTE 5
GRATING COVER W / REMOVABLE SCREEN BASKET BELOW
CHECHRED PLATE
METAL CRATE WIRE BOUND BOX TO DUMP COLLECTED FINES INTO (BY PLANT)
GRADE
ES-TK-80
MAX. 1500 mm
HLL 1300 mm
LLL 300 mm
SP ES-0088 NOTE 2
150 mm
300 mm
200 mm
POLYMER CONTAINING WASTEWATER SUMP
ES-P-80A ES-P-80B

FROM PELLET WATER 7442 WW ES-K-2704 — 10"-WW-ES1022-AA1B
FROM PELLET WATER 7443 WW ES-K-2704 — 4"-WW-ES1026-AR5W
FROM PELLET WATER 7444 WW ES-K-2704A — 2"-WW-ES1019-AR5W
FROM VENT STACK DRAIN 3790 WW ES-K-2701 — 2"-WW-ES1160-AR5W
FROM SPIN DRYER STRUCTURE 7436 WW ES-K-2701 — 2"-WW-ES1159-A5RW
GLOB COLLETION AREA 3784 WW ES-K-2700 — 8"-WW-EA5003-1FE0D01
BUILDING FLOOR DRAINS 7435 WW ES-K-2701 — 6"-WW-ES1158-A5RW

GRADE
7437 ES-K-2704 FROM ES-X-04 — 8"-WW-EA5001-1FE0D01
12"-WW-ES1157-1FE0D01
12"x10"
Y AG NOTE 1
10"x8" 8" HOLD 3
FROM CALCIUM STEARATE TANK ES-K-2705 7447
NOTE 1

ES-P-80A/ B
Service: F&P NON-OILY PROCESS WASTE WATER SUMP PUMPS
Type: Sump pump 1
Capacity 10.0 m^3/hr 1
Differential Press. 3.6 bar
Material of Construction 316SS 1

NOTES:
1. DRAINS ARE CONNECTED TO COVERED TRENCH.
2. REMOVABLE BASKET (950mmL x 950mmW x 300mmH) WITH 10 MESH SCREEN.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
4. NOT USED.
5. VACUUM TRUCK CONNECTION.
6. TOP TO BE REMOVABLE PLATE.
7. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:
4. DELETED 1
56. TO BE DEFINED LATER.

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C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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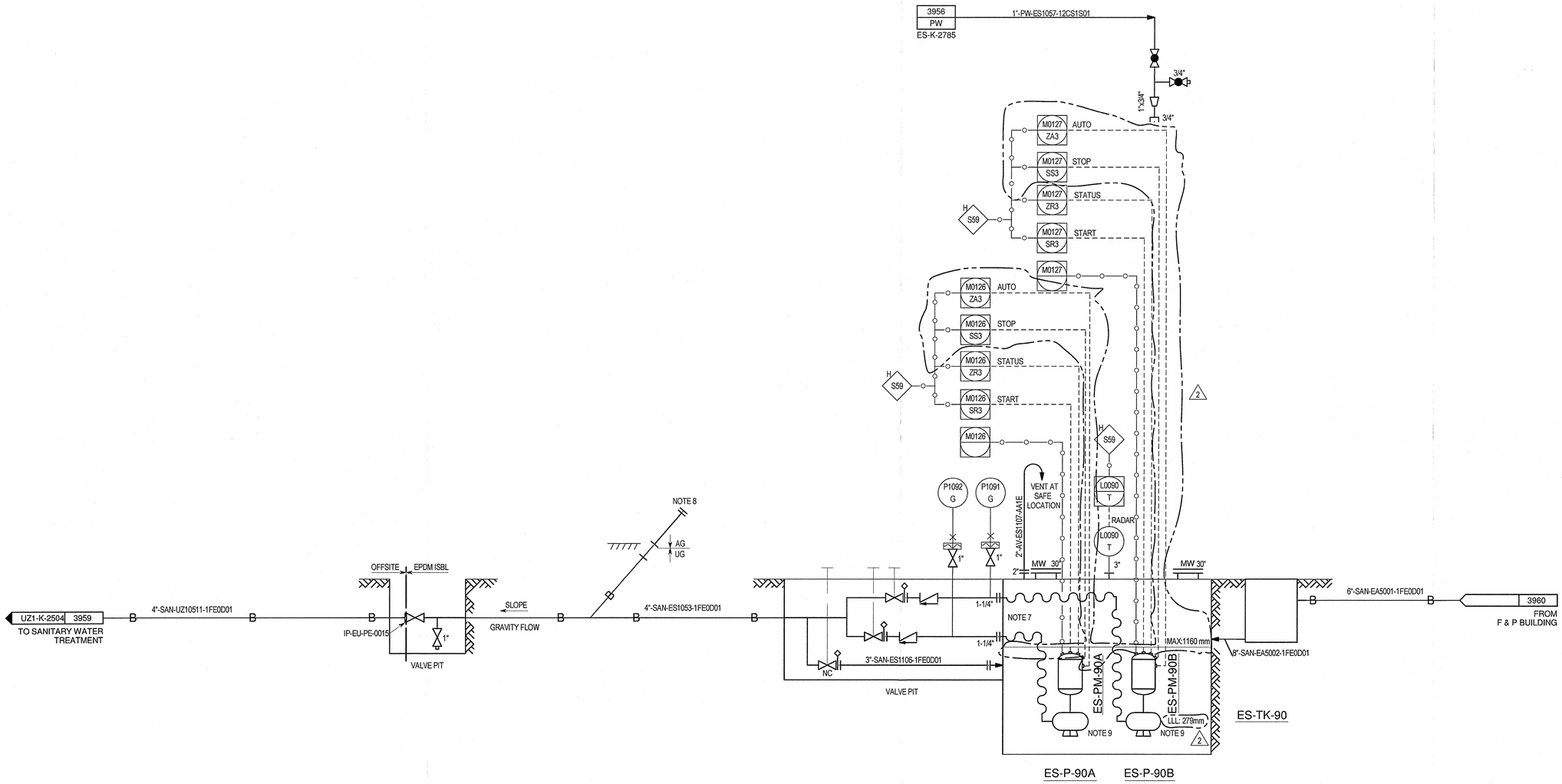
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
F&P PELLET WATER SEWER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2773	1 OF 1	1

ES-TK-90
Service: F&P SANITARY SEWER LIFT STATION SUMP
SIZE: 3000mm x 3000mm x 2270mm



ES-P-90A/ B
Service: F&P SANITARY SEWER PUMPS
Type: Sump pump
Capacity: 5.0 m^3/hr
Differential Press.: 2.0 bar
Material of Construction: CAST IRON GG25

NOTES:

1. ALL INSTRUMENT TAGS ARE PREFIXED WITH ES UNLESS OTHERWISE STATED.
2. NOT USED.
3. NOT USED.
4. NOT USED.
5. NOT USED.
6. NOT USED.
7. HOSE TO BE LONG ENOUGH TO ALLOW PUMP TO BE REMOVED FOR MAINTENANCE.
8. CLEANING CONNECTIONS SHALL BE PROVIDED AT EACH PIPE CHANGE OF DIRECTION LONG RADIUS ELBOWS SHALL BE USED.
9. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	16/10/2013	FINAL ISSUE REVISED	MCG	PSA	RAF
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

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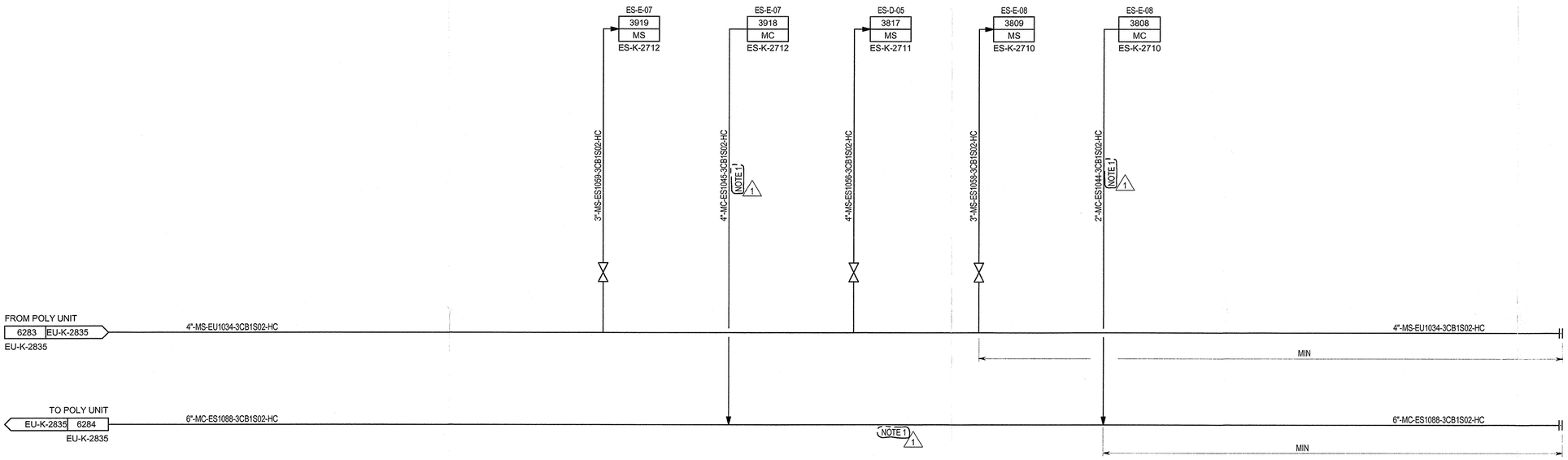
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
SANITARY SEWER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2779	1 OF 1	2



NOTES:

1. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. (1)

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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
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C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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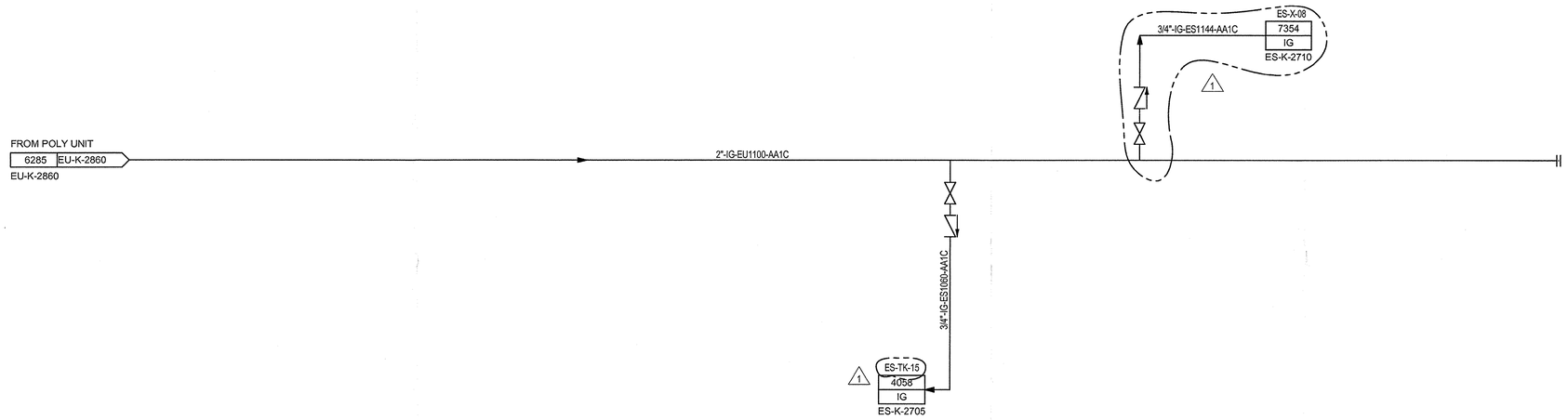
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
MP STEAM AND CONDENSATE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2780	1 OF 1	1



REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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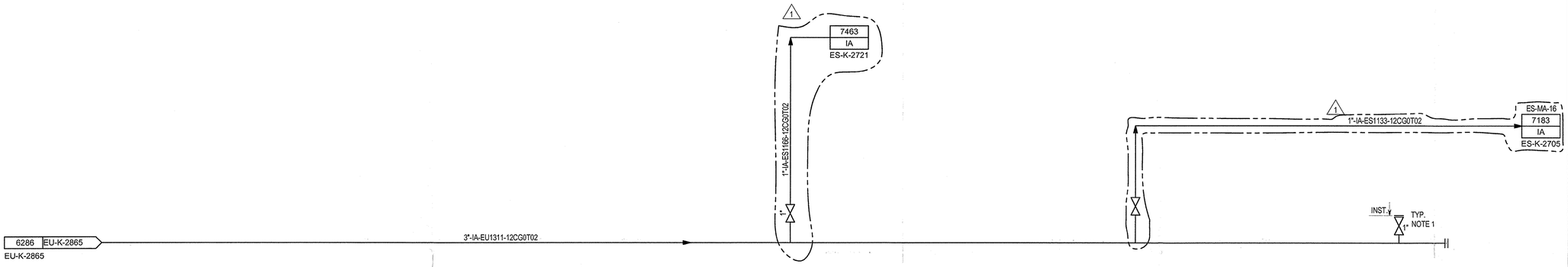
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
NITROGEN

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2782	1 OF 1	1



NOTES:

1. INSTRUMENT AIR VALVES (1" MINIMUM) TO BE LOCATED ON THE INSTRUMENT AIR HEADER WITHIN PROCESS AND UTILITY EVERY 6 METERS, AS A MINIMUM.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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0	11/04/2013	SSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	SSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	SSUE FOR DESIGN	MCG	PSA	CTR
C0	26/09/2011	SSUE FOR HAZOP	SWD	SNYM	NIKKO

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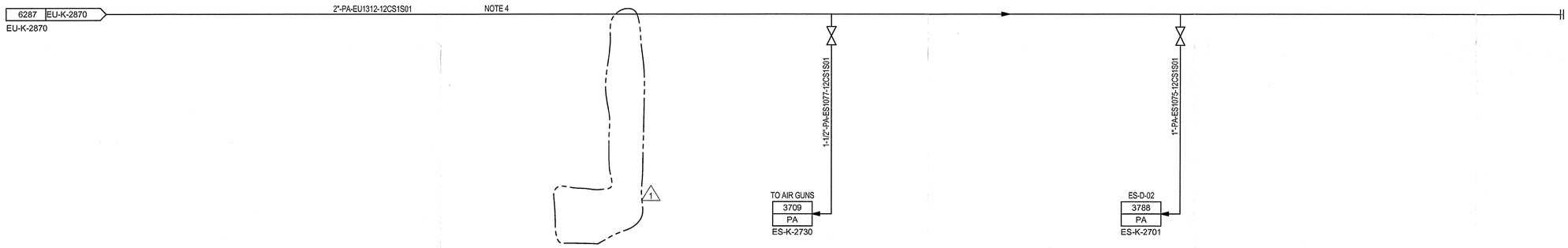
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
INSTRUMENT AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ES-K-2783	1 OF 1	1



NOTES:

1. NOT USED.
2. REFER TO DWG. NO. ES-P-5060 FOR THE LOCATION OF UTILITY STATION.
3. DELETED.
4. PLANT AIR BRANCH LINES TO BE LOCATED FROM TOP OF THE HEADER.

HOLDS:

34 DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	SAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
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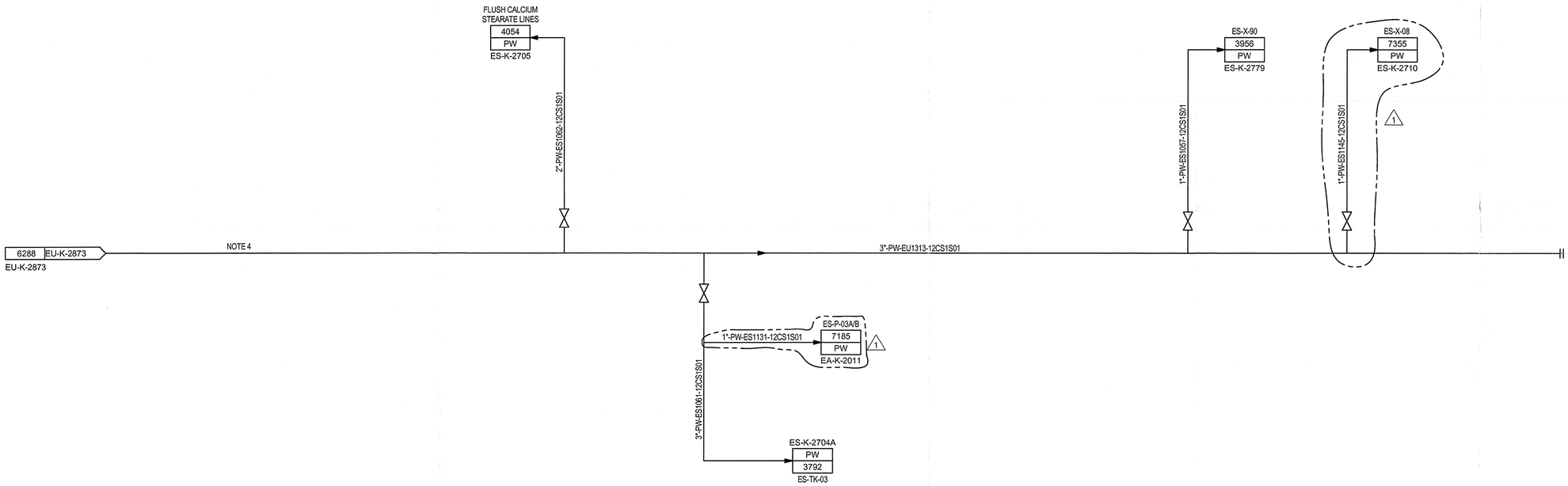
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PLANT AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2784	1 OF 1	1



NOTES:

1. NOT USED.
2. REFER TO DWG. NO. ES-P-5060 FOR THE LOCATION OF UTILITY STATION.
3. DELETED.
4. PLANT WATER BRANCH LINES TO BE LOCATED FROM TOP OF THE HEADER.

HOLDS:

341 DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
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C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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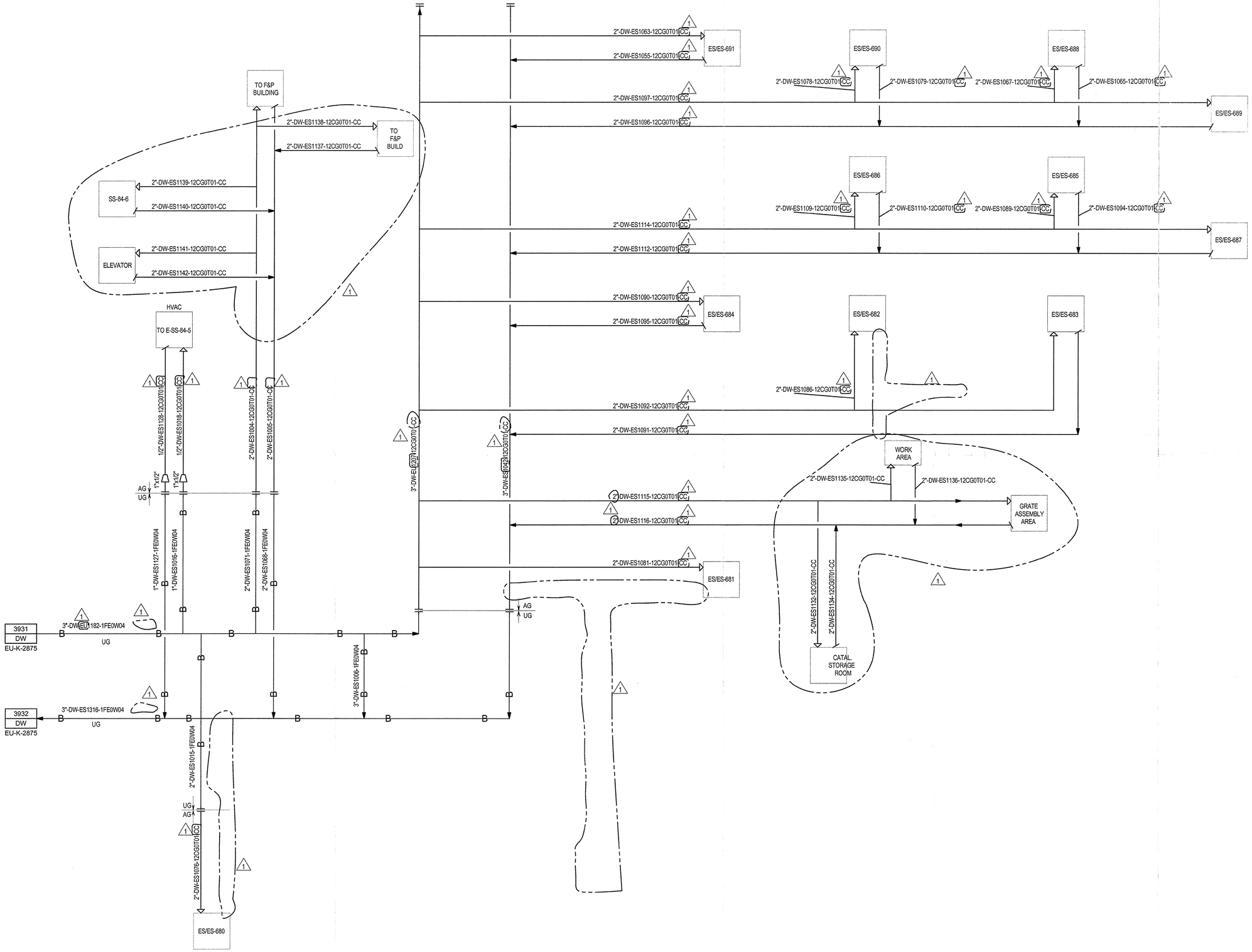
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
PLANT WATER

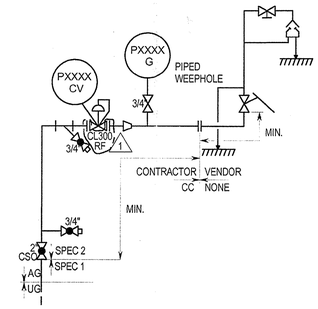
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	ES-K-2785	1 OF 1	1

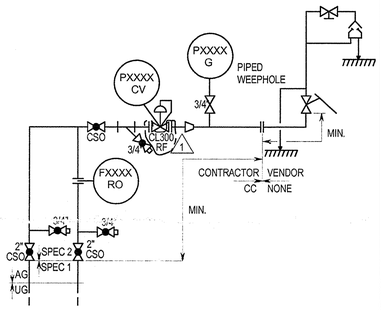


NOTES:

EYEWASH & SAFETY SHOWER CONFIGURATION FOR
1. EWSS NOT LOCATED AT END OF POTABLE WATER HEADER.
2. EWSS LOCATED <2.5m FROM POTABLE WATER SUPPLY HEADER.
3. FOR EWSS IDENTIFICATION CHART SEE EA-K-2020.
4. EWSS STATION NUMBER TO BE ASSIGNED BY OWNER.



△1 EYEWASH & SAFETY SHOWER CONFIGURATION FOR
1. ELEVATED STATIONS.
2. EWSS LOCATED >2.5m FROM POTABLE WATER SUPPLY HEADER.
3. EWSS LOCATED AT END OF POTABLE WATER HEADER.
4. FOR EWSS IDENTIFICATION CHART SEE EA-K-2020.
5. EWSS STATION NUMBER TO BE ASSIGNED BY OWNER.



1. REFER TO DWG. NO. ES-P-5050 FOR THE LOCATION OF EYEWASH AND SAFETY SHOWER.

2. DELETED.

HOLDS:

35. DELETED.

62. DELETED.

△1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
FINISHING & PACKAGING
POTABLE WATER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ES-K-2787	1 OF 1	1

ET-T-01

Service.: SOLVENT UNDERCUTTER TOWER
Dimension.: 1850.0 mm x 11610.0 mm
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /0°C
Materials of Construction.: CS
Trim.: VT-ET1087-AA1E-HC (VT-ET1095-3CB1S02-HC) 1
Insulation (type/thickness).: HC / 90.0 mm

ET-E-01

Service: UNDERCUTTER TOWER CONDENSER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 4919 kW
Surface Area: 510 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /0°C
Tube Design Pressure (Max / Min) @ Temperature.: 10.0 barg / x 105.0 C /0°C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): - / -
Insulation (type/thickness): PPI / 25.0 mm (Channel: NONE) 1

VAPOR
3319 EL-K-2320
FROM EL-D-02
RECYCLE SOLVENT
ACCUMULATOR

6"-P-EL1031-AA1E

3479 WF EZ-K-2910
8"-WF-ET1110-1CB4S01
1 mm : 500.0 mm SLOPE

3477 WF EZ-K-2910
26"-WF-ET1013-1CB4S01
1 mm : 500.0 mm SLOPE

7180 WF EZ-K-2910
8"-WF-ET1122-1CB4S01
1 mm : 500.0 mm SLOPE

SET AT 13.0 barg
SIZE: 3L4
PR053
SET AT 13.6 barg
SIZE: G R10
PR003
NOTE 16
CSO FP
SCD
CL300
1CB4S01 AA1E
NC
FREE DRAINING
NOTE 5
P1005 G
16"-P-ET1011-AA1E-PPI
8"-P-ET1061-AA1E-PPI
16"-P-ET1002-AA1E-PPI
SLOPE
16"x12"
NOTE 17
NOTE 2
3CB2S01 AA1E
SB ET-0003
MIN. 10D
NOTE 4
CSO
N3 N5 N2 N4 N1
ET-E-01
4"-P-ET1047-AA1E
4"x3"
4"x2"
4"x3"
P0023 V1
FO
3"
4"-P-ET1047-AA1E-PPI
SIGNAL
ET-K-2420 3516
FROM ET-P0023
KICKBACK
ET-K-2430 3532
FROM ET-C-01
LIGHT ENDS
COMPRESSOR
2"-P-ET1027-3CB2S01
NO POCKETS
ET-T-10 DISTILLATE
ET-K-2411 3495
FROM ET-P-10A/B
ISOHEXANE
PURIFICATION TOWER
P0014 T
P0014 T
2"-P-ET1010-AA1E
NO POCKETS
VAPOR OUTLET
4170 ET-K-2400A
TO ET-D-01
UNDERCUTTER
TOWER REFLUX DRUM
T0011 T
T0011 T
T011 E
NOTE 11
RTD
1-1/2"
T1001 W
T0012
T0012 V
12"
16"x12"
FO
16"-CWR-ET1036-12CS1S01
3470 CWR EU-K-2850
F0032 T
F0032 T
1/2"
16"-CWS-EU1076-12CS1S01
3471 CWS EU-K-2850
F0032 E
T0012 E
T0012 T
CSO 1"
MIN
10"-P-ET1008-AA1E-PPI
FREE DRAINING
LIQUID OUTLET
4171 ET-K-2400A
TO ET-D-01
UNDERCUTTER
TOWER REFLUX DRUM
3"-P-ET1004-AA1E
F0010 V
3CB2S01 AA1E
3"x1-1/2"
FO
3"-P-ET1004-3CB2S01
F0010 T
F0010 T
F0010 E
F0011 T
F0011 T
F0011 E
6"-P-ET1003-3CB2S01
SOLVENT
UNDERCUTTER
TOWER REFLUX
ET-K-2400A 4172
FROM ET-P-01A/B
SIGNAL
ET-K-2400A 4173
FROM ET-D-01
L0015 V
4"x3"
4"-P-ET1012-3CB2S01
ET-T-01 DISTILLATE
3318 EL-K-2320
TO EL-D-02 RECYCLE
SOLVENT
ACCUMULATOR
F0009 V
F0009 T
F0009 T
F0009 E
AA1E 3CB2S01
3"x1-1/2"
6"x3"
AA1E 3CB2S01
F0008 T
F0008 V
F0008
F0008 E
FC CL300
3"-P-ET1001-AA1E-HC
ET-T-01 BOTTOMS
3482 ET-K-2410
TO ET-T-10 ISOHEXANE
PURIFICATION TOWER
3"-SB-ET1039-AA1E-HC
TO EZ-D-50
(MIXED OIL DRUM)
3478 SB EZ-K-2950

LPS OH VAPOR
2832 ED-K-2610
FROM ED-D-01
LP SEPARATOR
16"-P-ED1019-AA1E-HC
NOTE 13

ET-T-01
MW3 MW2 MW1
TRAY 1
TRAY 2
TRAY 3
TRAY 9
TRAY 10
TRAY 11
TRAY 12
TRAY 13
MAX. LL
MIN. LL
T0008 T
T0008 T
T0008 E
T0009 E
T0009 T
T0009 T
T0010 T
T0010 T
T0010 E
T0007 E
T0007 T
T0007 T
P0013 DT
P0013 DT
P0035 DT
P0035 DT
L1014 G MAG
L0014 T DP
L0014
EBV(A)
4100 mm
ABOVE GRADE
FREE DRAINING
NOTE 7
NOTE 14
NOTE 1
NOTE 1

NOTES:

1. FUTURE PUMP AROUND CONNECTIONS.
2. LOCATE TIE-IN ON THE VERTICAL PORTION OF THE ET-E-01 INLET, AT LEAST 0.6 m BELOW THE HIGH POINT.
3. DELETED.
4. SUPPORT FOR SLUG FLOW.
5. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS VALVE.
6. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
7. DESIGN SUPPORTS FOR LIQUID FULL CONTINGENCY WITH FLUID DENSITY 600 kg/m3.
8. DELETED.
9. NOT USED.
10. DELETED.
11. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
12. DELETED.
13. PROVIDE BREAK-OUT FLANGE FOR PIPE CLEANING.
14. SPOOL TO BE REMOVABLE FOR VENTILATION FOR COLUMN ENTRY.
15. DELETED.
16. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
17. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

1. DELETED.
2. DELETED.
52. DELETED.
53. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RKK
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

kemya — al jubail petrochemical co.

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
SOLVENT UNDERCUTTER TOWER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2400	1 OF 1	1

ET-D-01

Service.: UNDERCUTTER TOWER REFLUX DRUM
Dimension.: 1750.0 mm x 5700.0 mm
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /0°C
Materials of Construction.: CS
Trim.: VT-ET1088-AA1E- / VT-ET1123-3CB2S501 (1)
Insulation (type/thickness).: /

VAPOR OUTLET
4170 ET-K-2400
2"-P-ET1010-AA1E
FROM ET-E-01
UNDERCUTTER
TOWER CONDENSER

LIQUID OUTLET
4171 ET-K-2400
10"-P-ET1008-AA1E-PPI
(1) NOTE 18
FROM ET-E-01
UNDERCUTTER
TOWER CONDENSER

SOLVENT
UNDERCUTTER
TOWER REFLUX
ET-K-2400 4172
6"-P-ET1003-3CB2S01
TO ET-T-01 SOLVENT
UNDERCUTTER
TOWER

F0034 T
NOTE 3
F0034 T
1/2" 1/2"
F0034 E
6"-P-ET1009-AA1E-HC
VAPOR
3515 ET-K-2420
TO ET-D-02
LIGHT ENDS
COMPRESSOR

NOTE 4
10" A
2" F
2" REDUCING FLANGE 10"x2"
10" D
6" B
C 8"
MIN. 9000 mm
ABOVE GRADE
MW1 MW 24"
MW2 MW 24"
ET-D-01
CL300 L2
CL300 L4
CL300 L6
CL300 L5
CL300 L3
CL300 L1
S
2"
3"
3/4"
L0015 T DP
NOTE 8
L0515 T SCD DP
L0515 T
T T01
L1015 G MAG
L0015
SIGNAL
4173 ET-K-2400
TO ET-L0015V
CONTROL VALVE
EBV(A)
3/4"
2"
(1) NOTE 11
2" RTD
T0013 E
T0013 T
T0013 T
3CB2S01 AA1E
1/2"
INSTR NOTE 17
A0805 N1 (1) MOISTURE
(1) NOTE 19
A0805 T
A0805 E
2" INSTR
A0805 P
8"-P-ET1005-AA1E
6"-P-ET1007-3CB2S01
8"-P-ET1006-AA1E
AA1E 3CB2S01
3/4"
NC 3/4"
3/4"-SB-ET1103-3CB2S01
P1001 G
M0001
ET-PM-01A
(1) CL300
2" 3/4"
ET-P-01A
3/4"
SP/ET-0001
8"-P-ET1008-3CB2S01
6" 8"x6"
NOTE 16 3/4"
(1) 2"x3/4"
3/4"-O-ET1099-12CS1S01
3472 SB EZ-K-2950
1"-SB-ET1068-AA1E
1" NC 1"x3/4"
MIN
O
CURB
1"-SB-ET1070-AA1E
3/4"-SB-ET1102-3CB2S01
P1002 G
M0002
ET-PM-01B
(1) CL300
2" 3/4"
ET-P-01B
3/4"
SP/ET-0002
8"-P-ET1009-3CB2S01
RF
NOTE 10

ET-P-01A/ B

Service: UNDERCUTTER TOWER REFLUX PUMPS
Type: Horizontal centrifugal pump
Capacity: 85.1 m^3/hr
Differential Press.: 4.5 bar
Material of Construction: CS

NOTES:

1. DELETED.
2. DELETED.
3. FLOW METER TO BE LOW PRESSURE DROP TYPE (I.E. VENTURI).
4. SUPPORT FOR SLUG FLOW.
5. DELETED.
6. DELETED.
7. DELETED.
8. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
9. NOT USED.
10. COMMON CURB FOR ET-P-01A/B, ET-P-10A/B AND ET-P-20A/B.
11. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
12. DELETED.
13. DELETED.
14. DELETED.
15. DELETED.
16. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
17. THREADED END VALVE.
18. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
19. ANALYZER LOCATED IN RACK EZ-AX-07 SEE DETAIL IN P&ID EZ-K-2955A. (1)

HOLDS:

4. DELETED. (1)

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1	13/09/2013	FINAL ISSUE	MCG	PSA	RNF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
SOLVENT UNDERCUTTER TOWER REFLUX DRUM (1)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

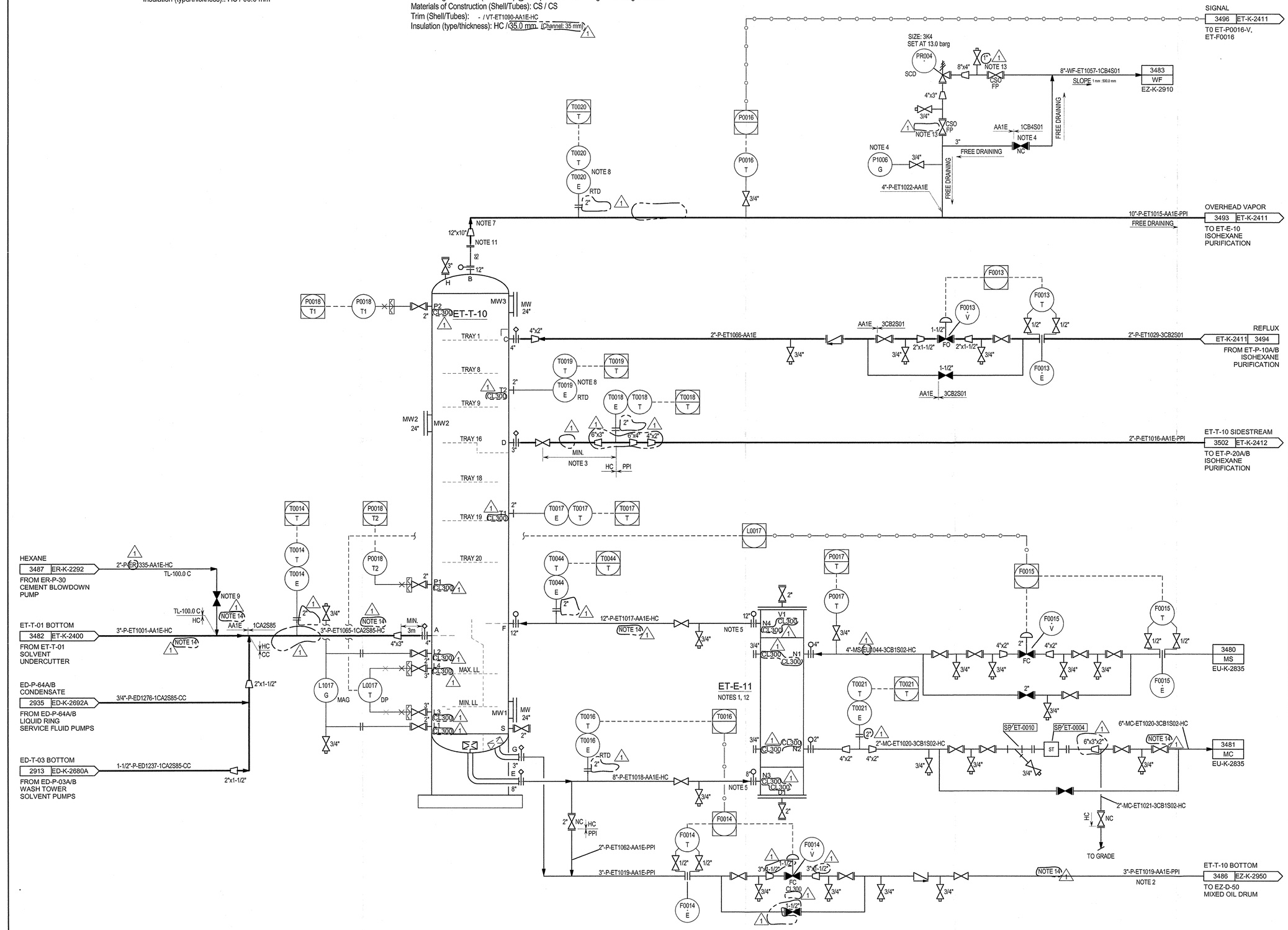
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2400A	1 OF 1	1

ET-T-10

Service.: ISOHEXANE PURIFICATION TOWER
Dimension.: 1200.0 mm x 17345.0 mm
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /0°C
Materials of Construction.: CS
Trim.: VT-ET1089-AA1E-HC / VT-ET1116-3CB2S01-HC (1)
Insulation (type/thickness).: HC / 90.0 mm

ET-E-11

Service: ISOHEXANE PURIFICATION TOWER REBOILER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 1466 kW
Surface Area: 57 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 315.0 C /0°C
Tube Design Pressure (Max / Min) @ Temperature.: 13.1 barg / -1.0 barg x 190.0 C /0°C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): - / VT-ET1090-AA1E-HC
Insulation (type/thickness): HC / 35.0 mm (Channel: 35 mm) (1)



NOTES:

1. TUBE BUNDLE TO BE CLEANED IN PLACE BY REMOVING THE TOP AND BOTTOM HEADS. ENSURE BOTTOM HEAD HAS ENOUGH CLEARANCE FOR BOTTOM HEAD REMOVAL.
2. HEAT LOSS IS NEEDED TO COOL THE STREAM BEFORE REACHING DRUM. ONLY INSULATE THE LINE FOR SAFETY. THE MAJORITY OF THE LINE SHALL NOT BE INSULATED.
3. MINIMUM HORIZONTAL RUN FOLLOWED BY A VERTICAL DROP.
4. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS VALVE.
5. THERMOSYPHON PIPING SHOULD BE AS SHORT AS POSSIBLE WITH MINIMUM BENDS.
6. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
7. DESIGN SUPPORTS FOR LIQUID FULL CONTINGENCY WITH FLUID DENSITY 770 kg/m3.
8. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
9. TO BE ACCESSIBLE.
10. DELETED.
11. SPOOL TO BE REMOVABLE FOR VENTILATION FOR COLUMN ENTRY.
12. DISTANCE BETWEEN BOTTOM TANGENT LINE OF ET-T-10 AND BOTTOM TANGENT LINE OF ET-E-11 SHALL BE 3760.
13. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
14. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. (1)

HOLDS:

1. DELETED. (1)
52. DELETED.
53. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
ISOHEXANE PURIFICATION TOWER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2410	1 OF 1	1

ET-E-10

Service: ISOHEXANE PURIFICATION TOWER CONDENSER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 1485 kW
Surface Area: 188 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /0ºC
Tube Design Pressure (Max / Min) @ Temperature.: 10.0 barg / x 90.0 C/0ºC
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): VT-ET1091-AA1E-PPI (VT-ET1124-3CB2S01-PPI) 1
Insulation (type/thickness): PPI / 25.0 mm (Channel: NONE) 1

1

OVERHEAD VAPOR
3493 ET-K-2410
FROM ET-T-10
ISOHEXANE
PURIFICATION TOWER

10"-P-ET1015-AA1E-PPI
FREE DRAINING

SIGNAL
3496 ET-K-2410
FROM ET-T-10
ISOHEXANE

NOTE 1

HIGH POINT
P0016 V
2"-1-1/2" FC CL300
1CB4S01 AA1E
MIN.

3488 WF EZ-K-2910
2"-WF-ET1037-1CB4S01

T1003 G
1-1/2"

3490 CWR EU-K-2850
8"-CWR-ET1044-12CS1S01
TET NOTE 5

T1045 G
4"x2"
2"-WF-ET1079-AA1E

RS 8"
N2 CL150
CL150 N1
ET-E-10
PPI
CL150 N3 CL300 L1
CL300 L3
CL300 L4
CL300 L2
N4
10" 2" 2"
CSO
T1002 W
3/4"-SB-ET1083-3CB2S01
3/4"-SB-ET1084-3CB2S01
3/4"-SB-ET1108-AA1E
3/4"-SB-ET1109-AA1E
3/4"-O-ET1111-12CS1S01
3/4"-O-ET1112-12CS1S01

PPI AA1E 3CB2S01
F0017 V
2"x1" FC
L1016 G MAG
L0018 T DP
L0018 NOTE 1

3491 CWS EU-K-2850
8"-CWS-EU1075-12CS1S01
8975 mm ABOVE GRADE
NOTE 7
T0022 T
T0022 T
T0022 E RTD

SLOPE
NOTE 3
AA1E
1/2" INST.
NOTE 9
4"-P-ET1024-AA1E
4"-P-ET1026-AA1E
3"-P-ET1025-3CB2S01
4"-P-ET1077-3CB2S01
4"-P-ET1078-3CB2S01

BUTENE-1 A0806 N1
ISOHEXANE A0806 N2
TOLUENE A0806 N3
ENB A0806 N4
NOTE 10
A0806 T
A0806 E GC
A0806 P

F0016
F0016 T
F0016 E
F0017
F0017 T
F0017 E
INST. 2"
2"-P-ET1600-3CB2S01
3"x2"
3"-P-ET1027-3CB2S01

F0033
T0504 W
T0504 T SCD
T0504 E SCD
T0504 T RTD
T20
T0504 AH
NOTE 2
F0033 T
F0033 E
T0004 E
T0004 T
T0004 T
2"-IHE-ET1067-3CB2S01
F0033 V
2"x1" FC

OVERHEAD PRODUCT
3495 ET-K-2400
TO ET-E-01
UNDERCUTTER
TOWER CONDENSER
2"-P-ET1027-3CB2S01

ISOHEXANE
3489 ER-K-2201
TO ISOHEXANE
STORAGE TANK
2"-IHE-ET1067-3CB2S01

REFLUX
3494 ET-K-2410
TO ET-T-10
ISOHEXANE
PURIFICATION TOWER
2"-P-ET1029-3CB2S01

P1010 G
P1011 G
NC 3/4"
ET-PM-10A
ET-PM-10B
NOTE 8
M0003
M0004
3CB2S01 AA1E
SP/ET-0005
SP/ET-0006
4"x2"
CL300 RF
2"x3/4"
1"x3/4"
ET-P-10A
ET-P-10B
MIN.
1" NC
3492 SB EZ-K-2950

1FE0D01 12CS1S01
8"-PCSRS-EA5067-1FE0D01
8"-PCSRS-EA5067-12CS1S01
NOTE 11
PCSRS
NC
CURB
CATCH BASIN
SLOPE
NOTE 6

ET-P-10A/ B
Service: ISOHEXANE PURIFICATION TOWER OVERHEAD PUMPS
Type: Horizontal centrifugal pump
Capacity: 25.3 m^3/hr
Differential Press.: 4.8 bar
Material of Construction: cs

NOTES:

1. TOWER PRESSURE CONTROLLED BY FLOODING THE CONDENSER (LEVEL ET-L0018 OVERRIDE OF PRESSURE CONTROL ET-P0016 ON P&ID ET-K-2410).
2. PRIORITY 1 ALARM.
3. PUMP SUCTION PIPING SHOULD BE CONTINUOUSLY SLOPE DOWNWARD TOWARD PUMPS AT A MINIMUM OF 50mm PER 30m.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
5. COLD SIDE OUTLET VALVE TO BE TAGGED: "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
6. COMMON CURB FOR ET-P-01A/B, ET-P-10A/B AND ET-P-20A/B.
7. RTD FOR MONITORING TO BE USED FOR OTHER CONTROL LOOP OR CALCULATION.
8. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
9. FLANGED OR THREADED END VALVE.
10. A 0806 (GC) LOCATED INSIDE SHELTER E-AS-01.
11. UNDERGROUND DRAIN FINAL DETAILS SHOWN IN CIVIL DRAWING.

HOLDS:

1. DELETED
4. DELETED 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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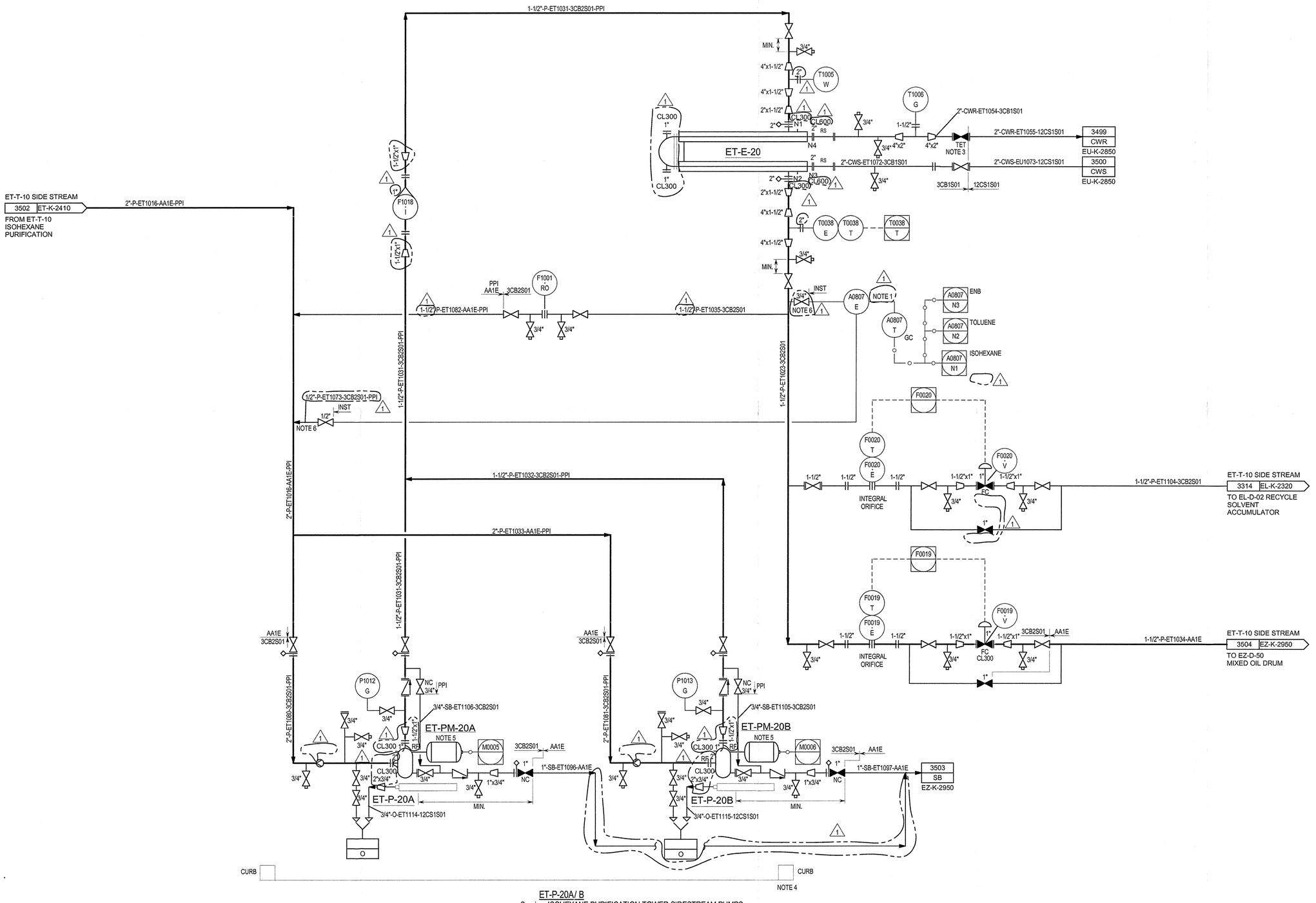
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
ISOHEXANE PURIF. TOWER OVHD

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2411	1 OF 1	1

ET-E-20

Service: ISOHEXANE PURIFICATION TOWER SIDESTREAM COOLER
Type: Double pipe heat exchanger
Heat Duty: 23 kW
Surface Area: 7 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 24.0 barg / -1.0 barg x 150.0 C /0ºC
Tube Design Pressure (Max / Min) @ Temperature.: 18.5 barg / x 125.0 C /0ºC
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): - / -
Insulation (type/thickness): PPI / 25.0 mm (Channel: 25 mm) 1



ET-P-20A/ B

Service: ISOHEXANE PURIFICATION TOWER SIDESTREAM PUMPS
Type: Horizontal centrifugal pump
Capacity (3.1) m^3/hr 1
Differential Press.: 6.5 bar
Material of Construction: CS

NOTES:

1. A 0807 (GC) LOCATED INSIDE SHELTER E-AS-01.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
3. COLD SIDE OUTLET VALVE TO BE TAGGED " DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
4. COMMON CURB FOR ET-P-01A/B, ET-P-10A/B AND ET-P-20A/B.
5. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
6. THREADED END VALVE. 1

HOLDS:

1. DELETED.
4. DELETED.
52. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Jubail, Kingdom of Saudi Arabia

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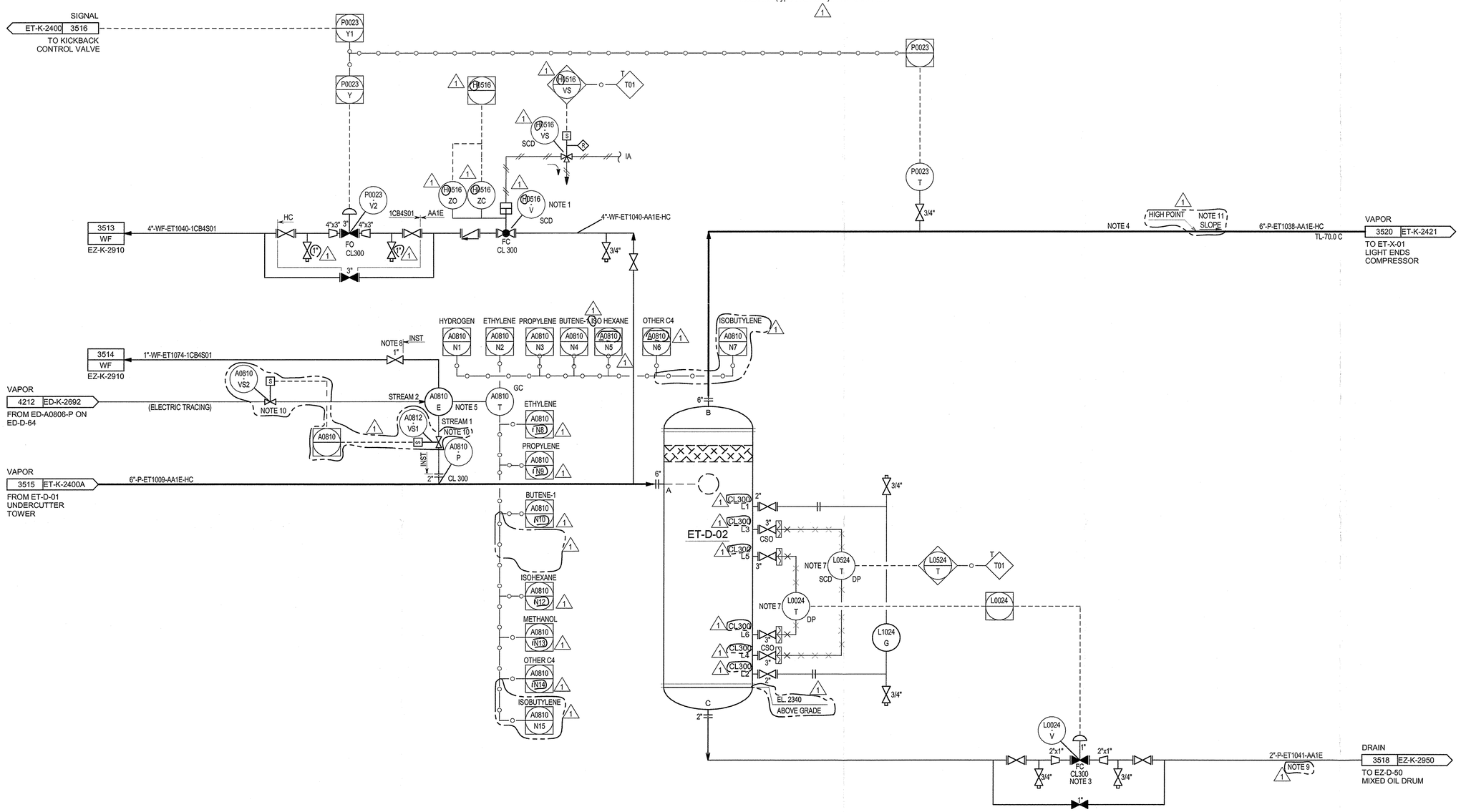
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
ENB SIDESTREAM COOLER & PUMPS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2412	1 OF 1	1

ET-D-02

Service.: LIGHT ENDS COMPRESSOR SUCTION K.O. DRUM
Dimension.: 700.0 mm x 2400.0 mm
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /0ºC
Materials of Construction.: CS
Trim.: VT-ET1092CB2S01-HC
Insulation (type/thickness).: HC / 90.0 mm



NOTES:

1. ROV TO CLOSE ON ET-D-01 HIGH LEVEL. TO PREVENT OVERFILL OF FLARE K.O. DRUM IN CASE OF LIQUID OVERFILL SCENARIO CAUSED BY FAILURE OF REFLUX PUMP ET-P-01.
2. SAMPLE TO BE ANALYZED BY SAME ANALYZER AS ET-A0810-P2 SAMPLE POINT ON DWG ED-K-2692.
3. ON/OFF WITH DEAD BAND CONTROL ACTION.
4. SLOPE TO ET-D-02. ET-D-02 TO BE LOCATED AS CLOSE AS POSSIBLE TO ET-C-01.
5. A 0810 (GC) LOCATED INSIDE SHELTER E-AS-01.
6. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
7. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
8. THREADED END VALVE.
9. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
10. SOLENOID VALVE IS SUPPLIED BY ASV.
11. HIGH POINT AS CLOSE AS POSSIBLE TO ET-D-03.

HOLDS:

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
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C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SWYM	NIKKO

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PROJECT:
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EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
LIGHT ENDS RECOVERY FEED

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2420	1 OF 1	1

ET-D-03 (2)
Service.: SUCTION DAMPENER
Dimension.: 558.8 mm x 1560.0 mm (TL - TL) (2)
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / x 190.0 C
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: /HOLD 8

ET-C-01 NOTE 12
Service: LIGHT ENDS COMPRESSOR
Type: Reciprocating compressor
Capacity: 1596.0 nm^3/hr
Pressure Suction/Discharge: 2.0 barg / 9.0 barg
Number of Stages:
Material of Construction: CS
Power Requirements: 90 kW

ET-D-04 (2)
Service.: DISCHARGE DAMPENER
Dimension.: 458.0 mm x 935.0 mm (TL - TL) (2)
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / x 190.0 C
Materials of Construction.: CS
Trim.:
Insulation (type/thickness).: HOLD 8 (2)

(TL RD TL)

ET-X-01
BY VENDOR

1"-P-ET4005-BCA01A
ET-K-2421A 6356
FROM DISTANCE PIECE VENT

1"-P-ET4003-BCA01A
ET-K-2421A 6357
FROM DISTANCE PIECE VENT

1"-P-ET4001-BCB01A

BCA01A
BCB01A

1"-WF-ET1117-1CB4S01
6420
WF
EZ-K-2910

SIZE: 1-1/2"G3"
SET AT 13.0 barg

PR008
SCD
3/4"
NOTE 9
SLOPE 1 mm : 500.0 mm
4"x3"
CSO FP
4"-WF-ET1060-1CB4S01
3519
WF
EZ-K-2910
MIN
3/4"
3"x1-1/2"
NOTE 9
CSO FP
PPI AA1E
1CB4S01
FREE DRAINING
3" NC (2)
4"x3"
FREE DRAINING

1"-P-ET4002-BCB01A

T01
2 OUT OF 3 VOTING
P0070 T0065 T0512 T0511 T0510 (H, HH)
NOTE 10
P1015 G
3/4"
3"-P-ET1042-AA1E-PPI
FREE DRAINING

P1030 G
NOTE 14
T1016 G
T0065 T0512 T0511 T0510 (T, E)
3/4"
1-1/2"
NOTE 14
4"-P-ET4000-BCB01A-PPI
NOTE 4
BCB01A
AA1E
3/4"
4"-P-ET1043-AA1E-PPI
EBV(B)
F0036 T
1/2"
1/2"
COMPRESSED VAPOR
3533 ET-K-2430
FREE DRAINING
TO ET-E-02 LIGHT ENDS COMPRESSOR
F0036 E

VAPOR
3520 ET-K-2420
6"-P-ET1038-AA1E-HC
TL-70.0 C
FROM ET-D-02 LIGHT ENDS COMPR. SUCTION K.O. DRUM
EBV(B)
NOTE 7
AA1E BCB01A
NOTE 2 NOTE 4
NOTE 15
CONICAL STRAINER
6"-P-ET4007-BCB01A
3/4"
NOTE 3 (TYP)

T01
P0530T
T1017 G
P1002 DG
NOTE 14
P0530 T
P1029 G
3/4"
1-1/2"

ET-D-03
P0050 T
LG-1
L1025 G
2" LO
CL300
L1035 G
1"
6"-P-ET4010-BCB01A
6"-P-ET4012-BCB01A
1"-O-ET4009-BCB01A
1"-O-ET4008-BCB01A
BCB01A 12CS1S01
1" LO
1"-O-ET1121-12CS1S01
O

T01
T0028 I
T0028 T
T0028 E
NOTE 14
1-1/2"

6"-P-ET4011-BCB01A
6"-P-ET4013-BCB01A
NOTE 13
ET-C-01 1º CYLINDER
ET-C-01 2º CYLINDER
ET-CM-01

STATUS M0507 ZR3
START M0507 SR3
STOP M0507 SS3
IN AUTO M0507 ZA3

STOP M0507 SS2
T01
H0501 SE
NOTE 8
H0501 SE11 SE12 SE13
SCD SCD SCD
STOP COMPRESSOR
H0501 XLDI
H0501 XLDO
H0501 IXL
H0501 XL
M0507
ESD PB AQUATED
X0503 ADI
X0503 ADO

NOTES:

1. DELETED. (2)
2. ALL BATTERY LIMIT CONNECTION SHALL BE TAKEN UP TO SKID EDGE.
3. ORIFICE PLATE HOLE DIAMETER SHALL BE FINALISE AFTER PULSATION STUDY.
4. DELETED. (2)
5. DELETED.
6. DELETED.
7. SLOPE TO ET-D-02. ET-D-02 TO BE LOCATED AS CLOSE AS POSSIBLE TO ET-C-01.
8. HAND SWITCH MOUNTED IN OPERATOR CONSOLE IN CONTROL ROOM.
9. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
10. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS VALVE.
11. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
12. TO BE MONITORED BY MACHINE PROTECTION AND MONITORING SYSTEM.
13. ALARM UPON COMPRESSOR SEAL FAILURE.
14. LOCATED AT INSTRUMENT BOARD.
15. PIPE SPECIFICATION BCB01A MATCHES PIPE SPECIFICATION AA1E. (2)

INTERLOCK TABLE

- H T51 COMP START INTERLOCK
- H T52 OIL PUMP MOTOR INTERLOCK
- H T53 OIL HEATER INTERLOCK
- H T54 MAIN MOTOR INTERLOCK
- H T56 COMMON ALARM, COMMON TRIP INTERLOCK
- T T01 SHUTDOWN INTERLOCK
- H T55 CAPACITY CONTROL
- H T55 CW HEATER INTERLOCK

HOLDS:

8. BY VENDOR. (2)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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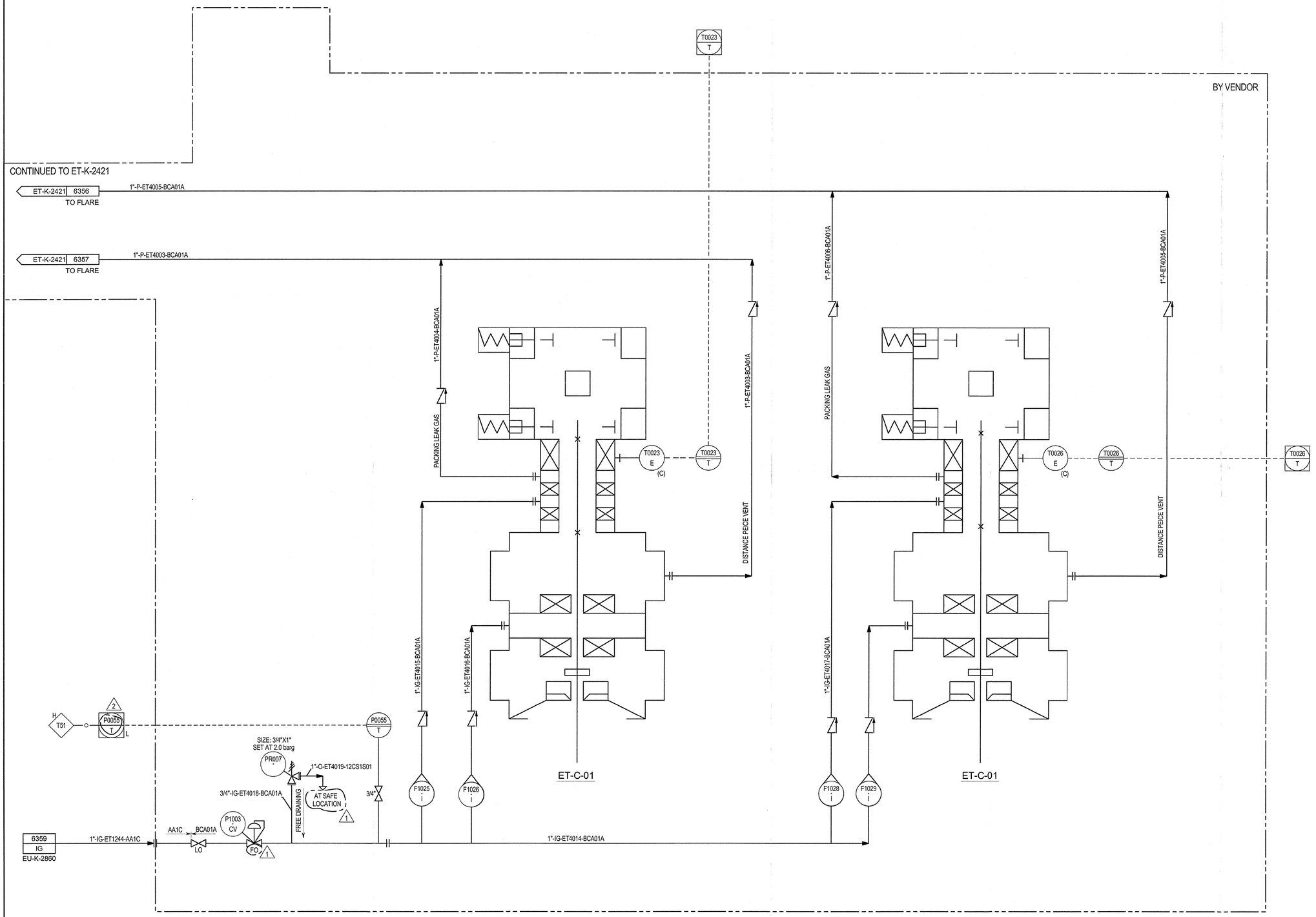
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LIGHT ENDS COMPRESSOR
RECYCLE TOWERS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	ET-K-2421	1 OF 1	2



NOTES:

1. ALL BATTERY LIMIT CONNECTION ARE TAKEN UP TO SKID EDGE.
2. INSULLATION / STEAM TRACING ON PIPING IS IN CONTRACTOR SCOPE.
3. ALL POWER CABLE ARE IN CONTRACTOR SCOPE OF SUPPLY.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH "ET" UNLESS OTHERWISE STATED.

INTERLOCK TABLE

H T51	COMP START INTERLOCK
H T52	OIL PUMP MOTOR INTERLOCK
H T53	OIL HEATER INTERLOCK
H T54	MAIN MOTOR INTERLOCK
H T56	COMMON ALARM, COMMON TRIP INTERLOCK
H T01	SHUTDOWN INTERLOCK
H T55	CAPACITY CONTROL
H T55	CW HEATER INTERLOCK

HOLDS:

2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
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A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LIGHT ENDS COMPRESSOR
GAS SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2421A	1 OF 1	2

ET-P-02 HOLD 8
Service: MAIN OIL PUMP 2
Type: Rotary pump
Capacity: 2.0m^3/hr 2
Differential Press.: 5.0 bar
Material of Construction: CS 1 2

ET-P-03 HOLD 8
Service: AUXILIARY OIL PUMP 2
Type: Rotary pump
Capacity: 2.0m^3/hr 2
Differential Press.: 5.0 bar
Material of Construction: CS 1 2

ET-E-04 HOLD 8
Service: LUBE OIL COOLER 2
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty:
Surface Area:
Shell Design Pressure (Max / Min) @ Temperature.: / 10.5 barg x 90.0 C
Tube Design Pressure (Max / Min) @ Temperature.: / 9.5 barg x 90.0 C
Materials of Construction (Shell/Tubes): CS / CS 1 2
Trim (Shell/Tubes):
Insulation (type/thickness): /

ET-FIL-01A/ B HOLD 8
Service: LUBE OIL FILTER 2
Type: Filter
Capacity:
Design Pressure (Max / Min) @ Temperature: 10.5 barg / x 90.0 C 2
Differential Pressure:
Material of Construction: CS/ SS 304 1 2
TRIM: 2

NOTES:
1. MARKED ITEMS ARE INTEGRAL PARTS OF COMPRESSOR.
2. MARKED PSV ARE THERMAL RELIEF VALVES.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH "ET" UNLESS OTHERWISE STATED.
4. THE TWO THREE WAY VALVES ARE MECHANICALLY GANGED. 2

INTERLOCK TABLE

H T51	COMP START INTERLOCK
H T52	OIL PUMP MOTOR INTERLOCK
H T53	OIL HEATER INTERLOCK
H T54	MAIN MOTOR INTERLOCK
H T56	COMMON ALARM, COMMON TRIP INTERLOCK
T T01	SHUTDOWN INTERLOCK
H T55	CAPACITY CONTROL
H T55	CW HEATER INTERLOCK

HOLDS:
8. BY VENDOR.

2 OUT OF 3 VOTING
BY VENDOR
ET-CM-01
EL. MOTOR 2
RATING 95 KW
SPEED 509 - RPM
SH-04-M-BA
ET-C-01
EXPLOSION RELEF VALVE
OIL STRAINER
ET-E-03
ET-P-02 2
NOTE 1
SET AT SIZE:
PR014 HOLD 8
FREE DRAINING HOLD 8
-P-ET4042-BCA01K
-P-ET4043-BCA01K
AMMETER 2
I1001
MCC
COMP. RUN
COMP. OFF
EMERGENCY STOP
COMP. START
COMP. STOP
OIL HEATER ON
STATUS
MALFUNCTION
START
STOP
4"x1"
4" CL300
1-1/2"
1"-P-ET4041-BCA01K
1"-P-ET4036-BCA01K
1"-P-ET4035-BCA01K
1"-P-ET4034-BCA01K
NOTE 4
ET-FIL-01A / B 2
(IB)
SIZE: 1"D2"
SET AT 6.0 barg
PR013
2"x1"
1"-P-ET4044-BCA01K
ET-P-03 2
ET-PM-03 2
LO
SIZE: 3/4" 1"
SET AT 6.0 barg
NOTE 2
PR012
1"-O-ET4033-12CS1S01
AT GRADE
FREE DRAINING
CONTINUED TO ET-K-2421D
1"-CWR-ET4031-12CS1S01 2
COOLING WATER
ET-K-2421D 6422
1"-CWS-ET4030-12CS1S01 2
COOLING WATER
6421 ET-K-2421D
3/4"-CWR-ET4032-12CS1S01
ET-E-04
1"-P-ET4040-BCA01K
1"-P-ET4039-BCA01K
1"-P-ET4038-BCA01K
1"-P-ET4037-BCA01K
SET AT 49°C
CL300
1-1/2"x1"
RUN
STOP

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

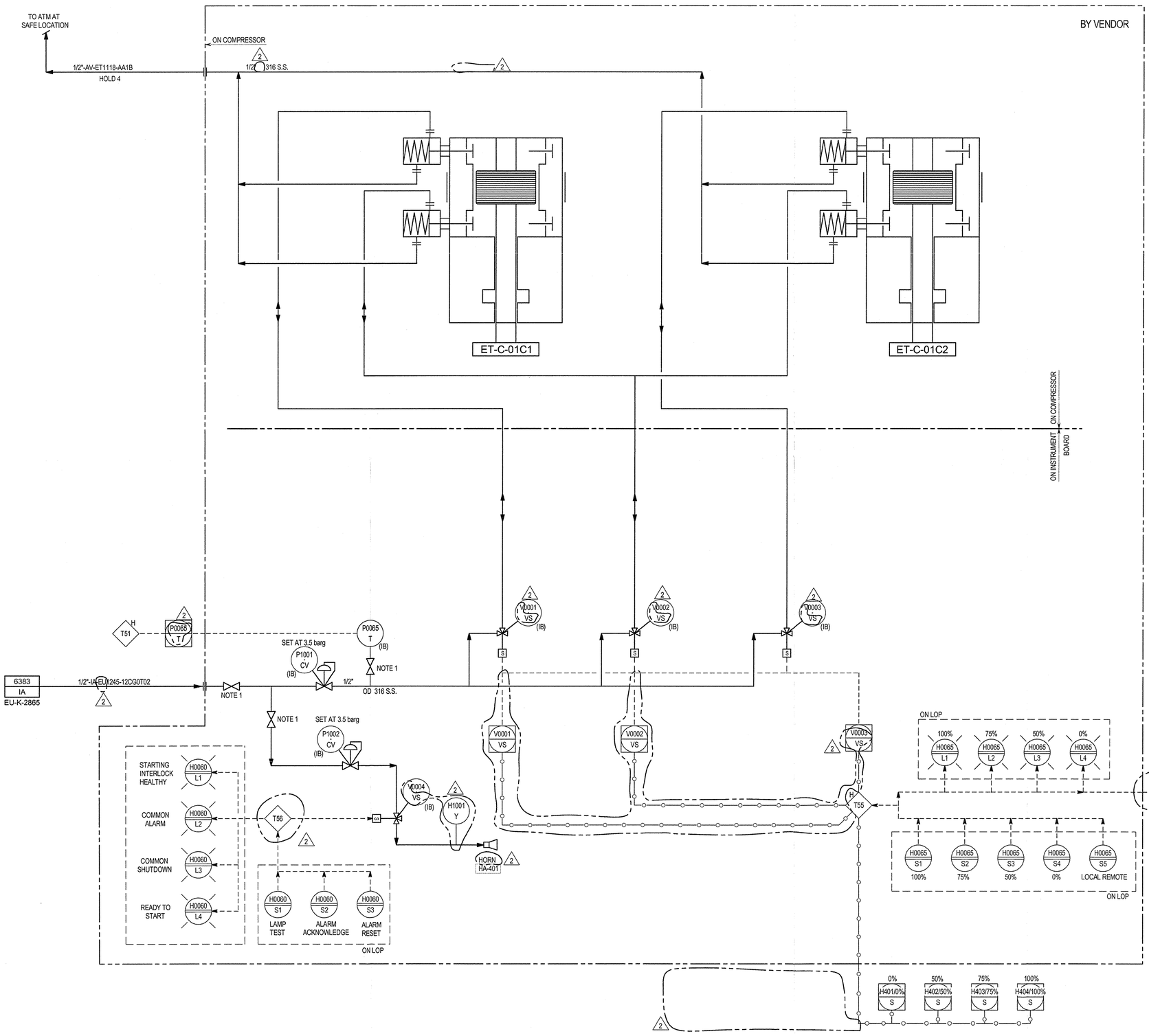
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LIGHT ENDS COMPRESSOR
OIL SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2421B	1 OF 1	2



LOAD	C1	C2	SOLENOID VALVE 24V DC		
	HE/CE	HE/CE	V0001VS	V0002VS	V0003VS
100%	+/+	+/+	E	E	E
75%	-/+	-/+	DE	E	E
50%	-/+	-/+	DE	E	DE
0%	-/-	-/-	DE	DE	DE

HE: - HEAD END + SUCTION VALVE WORKING
CE: - CRANK END - SUCTION VALVE OPEN

E SOLENOID VALVE ENERGISED
INSTRUMENT AIR PRESSURE ON UNLOADER
SUCTION VALVE IN WORKING POSITION.

DE SOLENOID VALVE DE ENERGISED
NO INTRUMENT AIR PRESSURE ON UNLOADER
SUCTION VALVE IN NO LOAD POSITION.

NOTES:

1. BALL VALVE WITH 1/2" TUBE OD CONNECTION.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH "ET" UNLESS OTHERWISE STATED.

INTERLOCK TABLE

- T51 — COMP. START INTERLOCK
- T52 — OIL PUMP MOTOR INTERLOCK
- T53 — OIL HEATER INTERLOCK
- T54 — MAIN MOTOR INTERLOCK
- T56 — COMMON ALARM, COMMON TRIP INTERLOCK
- T T01 — SHUTDOWN INTERLOCK
- T55 — CAPACITY CONTROL
- H T55 — CW HEATER INTERLOCK

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
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A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LIGHT ENDS COMPRESSOR
CAPACITY CONTROL SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2421C	1 OF 1	2

ET-E-05
Service: CW HEATER

BY VENDOR

COOLING WATER
ET-K-2421B 6421
OIL SYSTEM

1"-CWS-ET4030-12CS1S01

6751
CWS
EU-K-2850

1-1/2"-CWS-ET1120-12CS1S01

SET AT 52.0 barg
P1004 CV
FO
LO
P1025 G
T1010 G
1-1/2"
4"x1-1/2"
4"x3/4"
4" CL300
125 MICRON RATING

U0001 A
M0001 SR3 START
M0001 SS3 STOP
M0001 ZR3 STATUS
H T57
H0070 S1 START

3/4"-CWS-ET4020-12CS1S01
1/2"

3/4"-CWS-ET4021-12CS1S01

MCC

T0060 T
T0060 E
T0060 T
H T51

H T57
T0001 T
T0001 T

ET-E-05
HEATER

3/4"-CWS-ET4022-12CS1S01
3/4"-CWS-ET4023-12CS1S01

CONTINUED TO ET-K-2421B

SIZE: 3/4"X1"
SET AT 6.0 barg
NOTE 2
PR010

1"-O-ET4045-12CS1S01
AT GRADE
3/4"-CWR-ET4044-12CS1S01
1/2"
FREE DRAINING
3/4" LO

C24
C22
C25
C21
C26
C23

3/4"-CWR-ET4025-12CS1S01
3/4"-CWR-ET4024-12CS1S01

H1001 SG
F1005 SG
T1011 G
1-1/2" CL300
1-1/2"x3/4"
1-1/2"

SIZE: 3/4"X1"
SET AT 6.0 barg
NOTE 2
PR011

1"-O-ET4029-12CS1S01
AT GRADE
3/4"-CWR-ET4028-12CS1S01
1/2"
FREE DRAINING
3/4" CSO

3/4"-CWS-ET4024-12CS1S01

H1002 SG
F1006 SG
T1012 G
1-1/2" CL300
1-1/2"x3/4"
1-1/2"

3/4"-CWR-ET4026-12CS1S01

C6-235A
1ST STAGE

C6-235A
1ST STAGE

COOLING WATER
6422 ET-K-2421B
OIL SYSTEM

1"-CWR-ET4031-12CS1S01

6752
CWR
EU-K-2850

1-1/2"-CWR-ET1119-12CS1S01

1-1/2"x3/4"

3/4"-CWR-ET4027-12CS1S01

NOTES:
1. INSULATION/HEAT TRACING IF ANY SHALL BE IN CLIENT SCOPE.
2. DESIGN FOR THERMAL RELIEF CASE.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH "ET" UNLESS OTHERWISE STARTED.

INTERLOCK TABLE

H T51	COMP. START INTERLOCK
H T52	OIL PUMP MOTOR INTERLOCK
H T53	OIL HEATER INTERLOCK
H T54	MAIN MOTOR INTERLOCK
H T56	COMMON ALARM, COMMON TRIP INTERLOCK
T T01	SHUTDOWN INTERLOCK
H T55	CAPACITY CONTROL
H T57	CW HEATER INTERLOCK

HOLDS:

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
A0	01/03/2013	INTERNAL ISSUED FOR DESIGN FREEZE	MCG	DRS	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
LIGHT ENDS COMPRESSOR
WATER SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2421D	1 OF 1	2

ET-E-02

Service: LIGHT ENDS COMPRESSOR DISCHARGE CHILLER
Type: TEMA shell type K Shell & Tube heat exchanger
Heat Duty: 319 kW
Surface Area: 35 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 115.0 C /-48ºC
Tube Design Pressure (Max / Min) @ Temperature.: 13.1 barg / x 190.0 C /-46ºC
Materials of Construction (Shell/Tubes): LTCS / LTCS
Trim (Shell/Tubes): VT-ET1093-3CA1S01-CC / -
Insulation (type/thickness): CC / 85.0 mm (Channel: 75 mm) 1

ET-D-05

Service.: LIGHT ENDS RECOVERY FLASH DRUM
Dimension.: 591.0 mm x 2600.0 mm
Design Pressure (Max / Min) @ Temperature.: 13.0 barg / -1.0 barg x 190.0 C /-46ºC
Materials of Construction.: LTCS
Trim.: VT-ET1094-3CA2S85-CC 1
Insulation (type/thickness).: CC / 90.0 mm

1

NOTES:

1. SUPPORT FOR SLUG FLOW.
2. KICKBACK TAKEOFF FROM TOP OF PIPE IN HORIZONTAL RUN.
3. A0808 (G0) & A0804 ARE LOCATED INSIDE SHELTER E-AS-01.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH ET UNLESS OTHERWISE STATED.
5. CHECK VALVE TO BE SWING OR WAFER TYPE ONLY.
6. DELETED.
7. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM AT OR BELOW THE HORIZONTAL.
8. THREADED END VALVE.
9. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

1. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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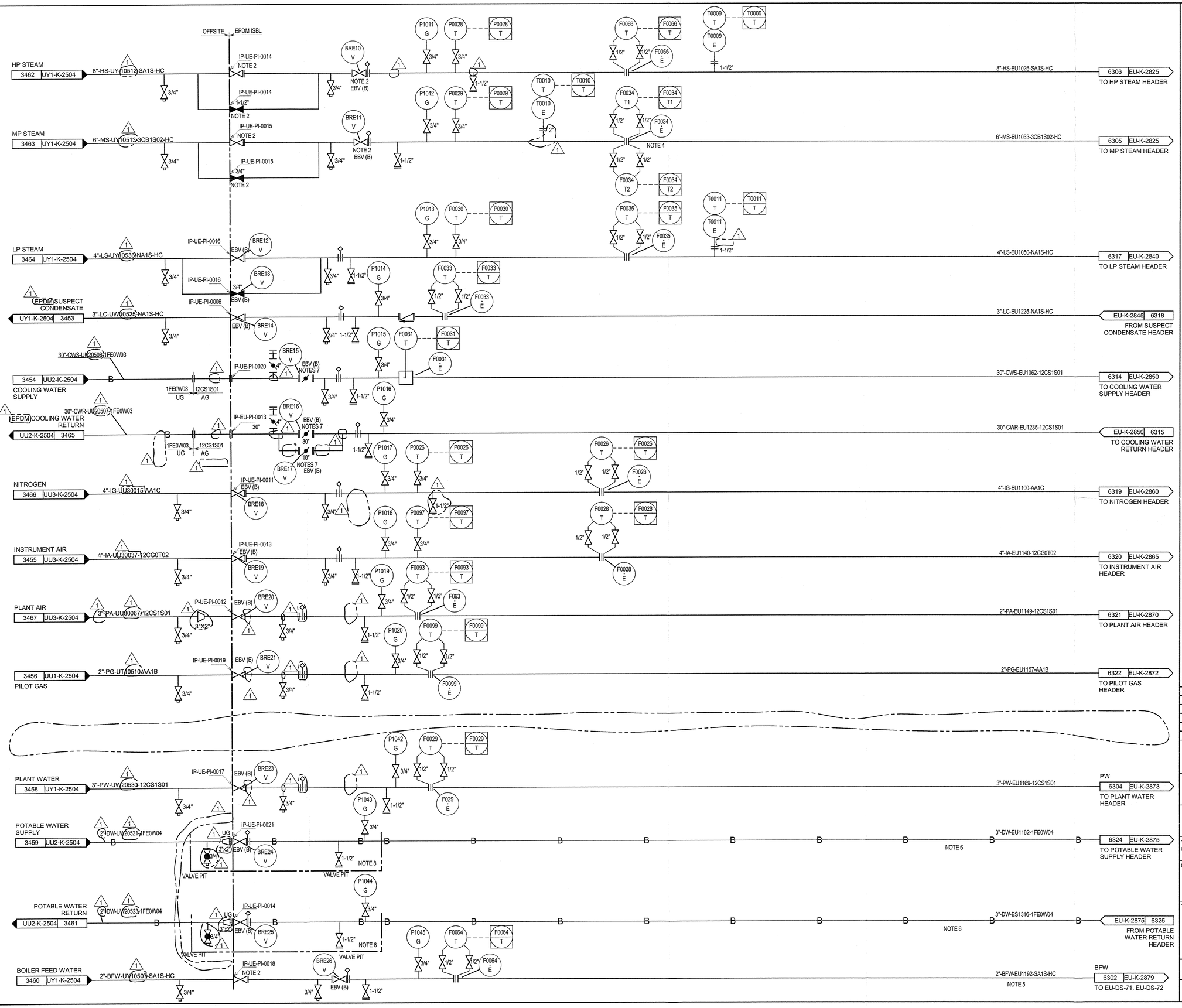
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
RECYCLE TOWERS
LIGHT ENDS RECOVERY FLASH DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	ET-K-2430	1 OF 1	1



NOTES:

1. DELETED.
2. TO BE LOCATED AT BATTERY LIMIT MANIFOLD.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EU UNLESS OTHERWISE STATED.
4. BI-DIRECTION METERING TO BE REQUIRED.
5. DESUPERHEATING WATER (PHOSPHATE FREE BOILER FEED WATER).
6. UNDERGROUND PIPING.
7. ISOLATION VALVE TO BE VENESSA TIGHT SHUT-OFF TRIPLE OFFSET VALVE OR EQUIVALENT.
8. GRATING OVER VALVE PIT.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/09/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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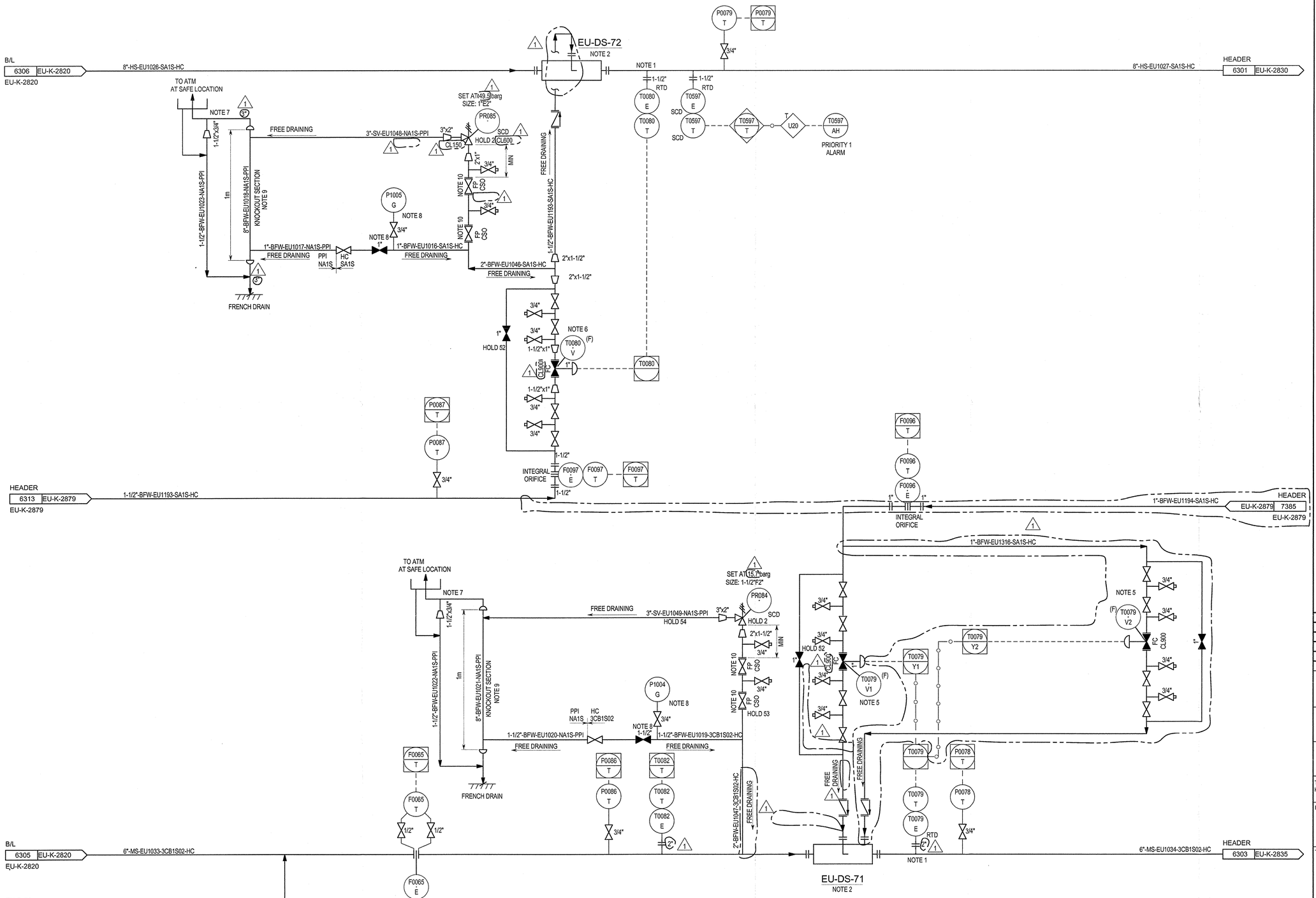
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
BATTERY LIMIT UTILITIES

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2820	1 OF 1	1

EU-DS-72
Service: HP STEAM DESUPERHEATER
Type: Spray desuperheater
Heat Duty:
Materials of Construction: 304 S.S.
D.P.: 51.0 barg/ -1.013 barg/ D.T.: 425/0 ºC

EU-DS-71
Service: MP STEAM DESUPERHEATER
Type: Spray desuperheater
Heat Duty:
Materials of Construction: 304 S.S.
D.P.: 17.0 barg/ -1.013 barg/ D.T.: 315/0 ºC



NOTES:

1. CONTROLLING TEMPERATURE ELEMENT SHOULD BE LOCATED AT LEAST 20 PIPE DIAMETERS DOWNSTREAM OF DESUPERHEATER.
2. ELBOWS SHOULD BE AVOIDED WITHIN 10 PIPE DIAMETERS DOWNSTREAM OF DESUPERHEATER TO MINIMIZE EROSION.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EU UNLESS OTHERWISE STATED.
4. DELETED.
5. COORDINATE EU-T0079 (V1/V2) SIZING WITH EU-PR-084 SIZING. ED-T0079 (V1/V2) VALVE COEFFICIENT NOT TO EXCEED 2.0.
6. COORDINATE EU-T0080-V SIZING WITH EU-PR-085 SIZING. ED-T0080-V VALVE COEFFICIENT NOT TO EXCEED 6.0.
7. 3/4" WEEP HOLE.
8. PG TO BE READABLE FROM BYPASS VALVE.
9. KNOCKOUT SECTION DIAMETER TO BE 3 SIZES LARGER THAN OUTLET SIZE.
10. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.

HOLDS:

1. CONTROL VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
52. BYPASS SIZE TO BE CONFIRMED WITH FINAL CONTROL VALVE SIZE.
53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NKKO

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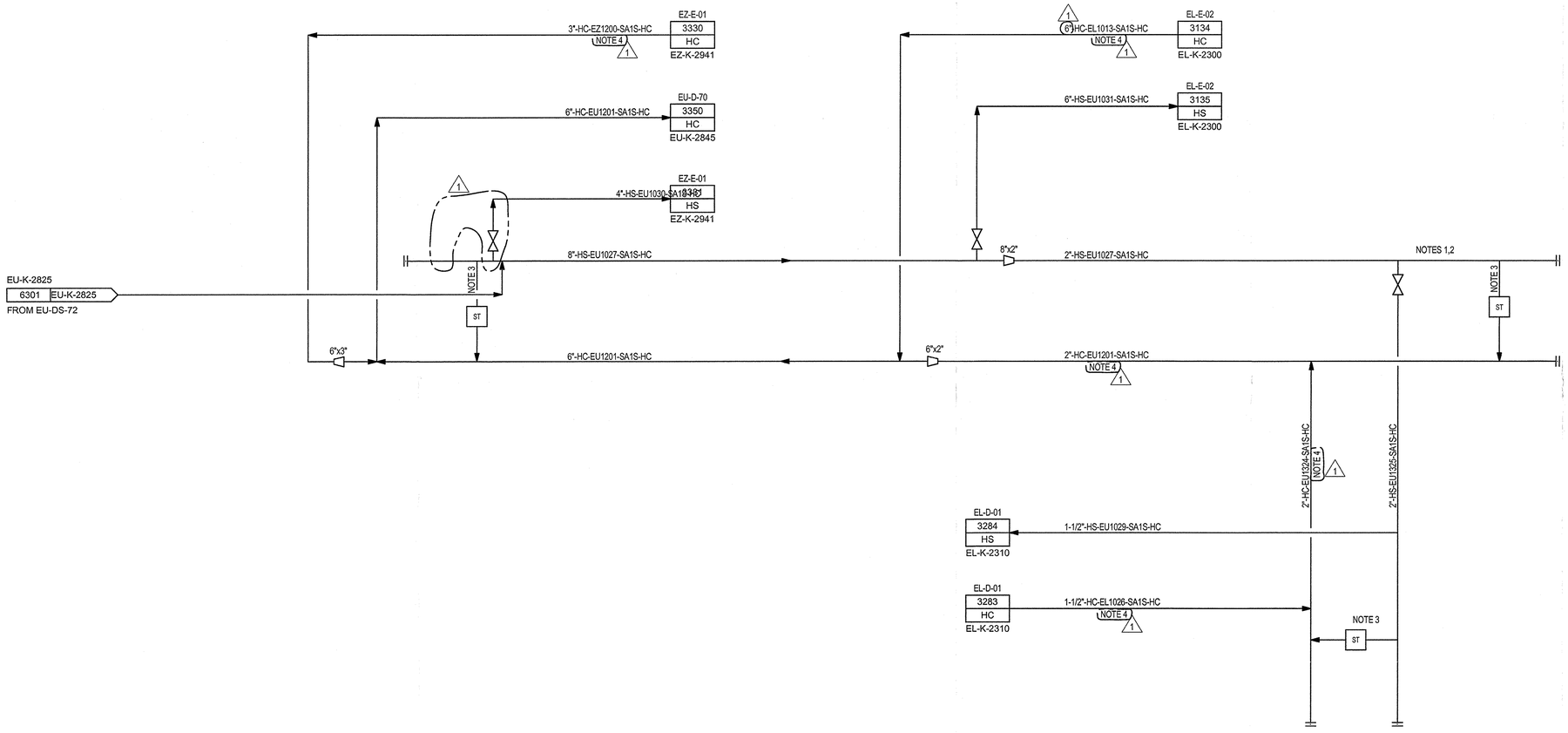
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
HP & MP DESUPERHEATERS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2825	1 OF 1	1



NOTES:

1. STEAM BRANCH LINES TO BE CONNECTED TO THE TOP OF THE HEADER.
2. BLOCK VALVES IN BRANCH LINES TO BE INSTALLED ABOVE THE ELEVATION OF THE STEAM HEADER AND AVOIDING POCKETS.
3. PROVIDE DRIP POCKETS ON ALL STEAM HEADERS AS REQUIRED. REFER TO DWG Nº 00-K-2009 FOR TYPICAL DETAILS.
4. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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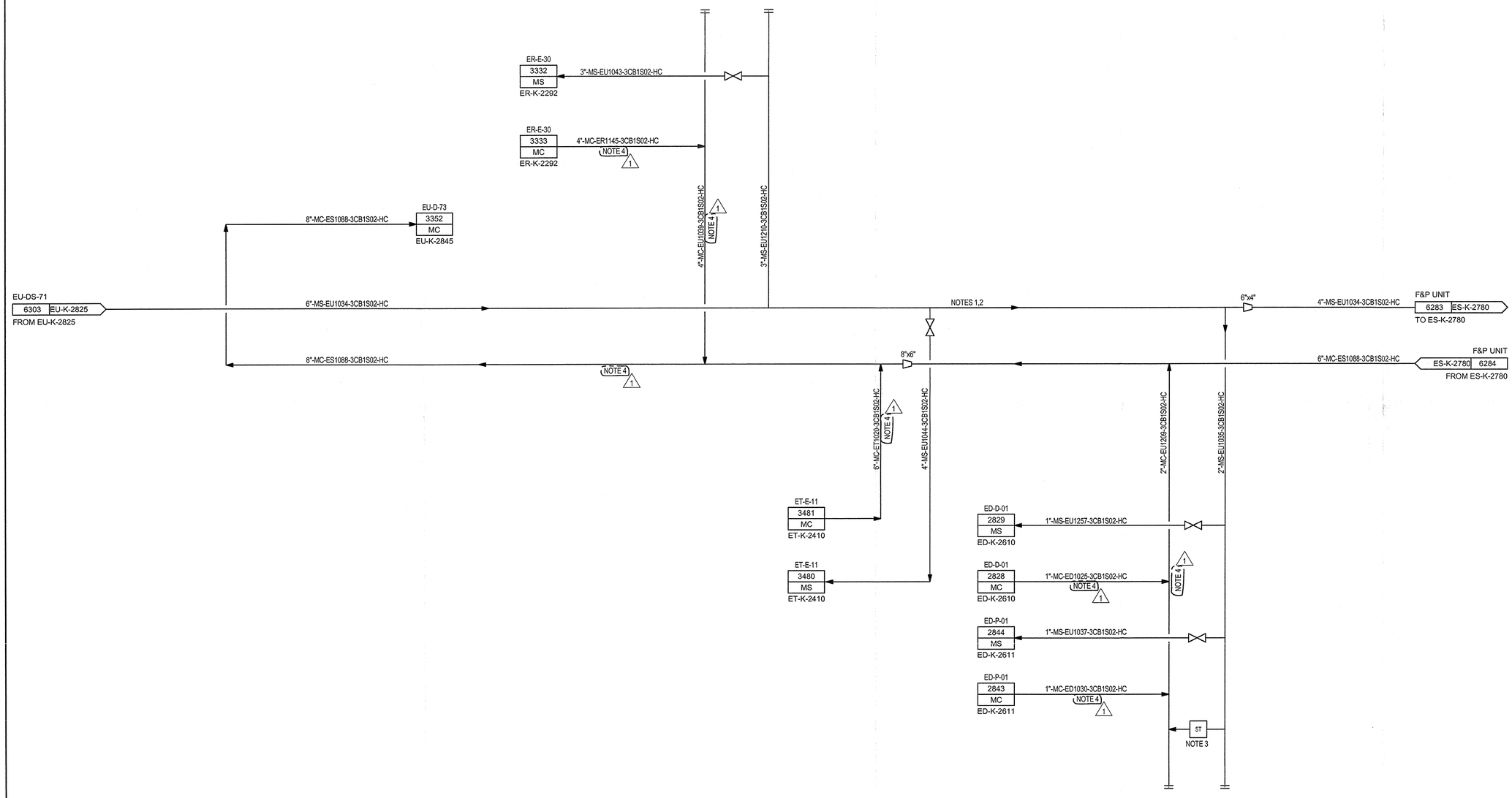
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
HP STEAM AND CONDENSATE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2830	1 OF 1	1



NOTES:

1. STEAM BRANCH LINES TO BE CONNECTED TO THE TOP OF THE HEADER.
2. BLOCK VALVES IN BRANCH LINES TO BE INSTALLED ABOVE THE ELEVATION OF THE STEAM HEADER AND AVOIDING POCKETS.
3. PROVIDE DRIP POCKETS ON ALL STEAM HEADERS AS REQUIRED. REFER TO DWG Nº 00-K-2009 FOR TYPICAL DETAILS.

4. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	SSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	SSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	SSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	SSUE FOR HAZOP	SWD	SNYM	NIKKO

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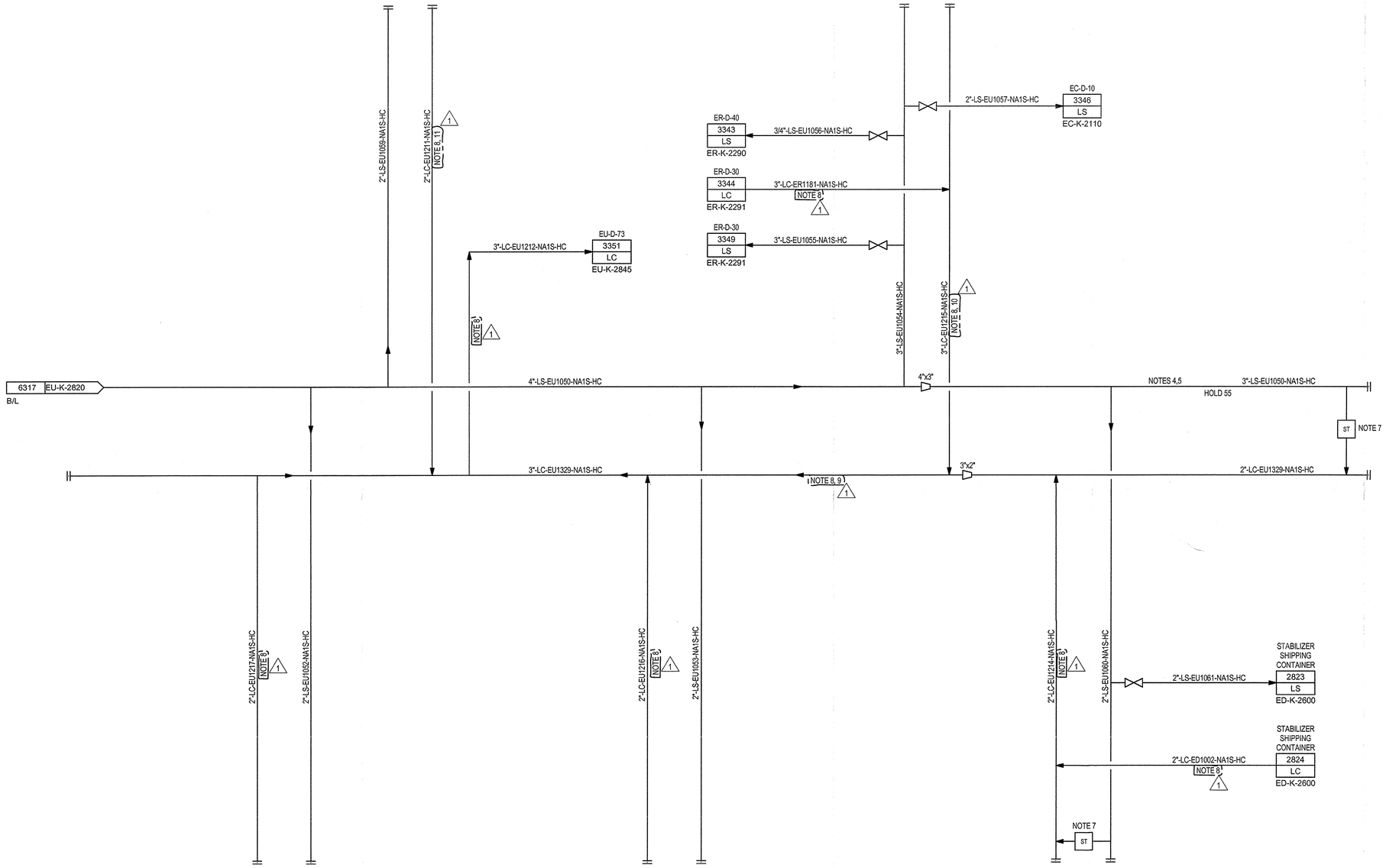
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
MP STEAM AND CONDENSATE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2835	1 OF 1	1



NOTES:

1. NOT USED.
2. REFER TO EU-K-2880A-B FOR THE LOCATION OF UTILITY STATION.
3. DELETED.
4. STEAM BRANCH LINES TO BE CONNECTED TO THE TOP OF THE HEADER.
5. BLOCK VALVE IN BRANCH LINES TO BE INSTALLED ABOVE THE ELEVATION OF THE STEAM HEADER AND AVOIDING POCKETS.
6. REFER TO DWG. NO. 00-K-2009 FOR TYPICAL DETAILS OF UTILITY STATIONS.
7. PROVIDE DRIP POCKETS ON ALL STEAM HEADERS AS REQUIRED. REFER TO DWG. NO. 00-K-2009 FOR TYPICAL DETAILS.
8. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
9. LINE SIZE CONSIDERING 24 TRACE MANIFOLDS.
10. LINE SIZE CONSIDERING 54 TRACE MANIFOLDS.
11. LINE SIZE CONSIDERING 12 TRACE MANIFOLDS.

HOLDS:

34. DELETED.
55. NUMBER AND LOCATION OF STEAM TRACING CONNECTIONS TO BE CONFIRMED ACCORDING TO FINAL PIPING ARRANGEMENT.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	SNYM	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
LP STEAM AND CONDENSATE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2840	1 OF 1	1

EU-D-70

Service.: MP CONDENSATE DRUM
Dimension.: 1400.0 mm x 3850.0 mm
Design Pressure (Max / Min) @ Temperature.: 17.0 barg / -1.0 barg x 315.0 C /0 C
Materials of Construction.: CS
Trim.: VT-EU1198-3CB1S02-HC
Insulation (type/thickness).: HC / 90.0 mm

EU-D-73

Service.: ATMOSPHERIC CONDENSATE DRUM
Dimension.: 1550.0 mm x 4750.0 mm
Design Pressure (Max / Min) @ Temperature.: 3.5 barg / -1.0 barg x 150.0 C /0 C
Materials of Construction.: CS
Trim.: -EU -NA1S-HC
Insulation (type/thickness).: HC / 90.0 mm

EU-E-73

Service: CONDENSATE CONDENSER
Type: TEMA BE- Shell & Tube heat exchanger BE(-)
Heat Duty: 3508 kW
Surface Area: 93 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 9.5 barg / -1.0 barg x 100.0 C /0 C
Tube Design Pressure (Max / Min) @ Temperature.: 7.4 barg / x 150.0 C /0 C
Materials of Construction (Shell/Tubes): CS / CS
Trim (Shell/Tubes): VT-EU1122-12CS1S01- /0
Insulation (type/thickness): PPI / 25.0 mm

EU-P-73A / B

Service: CONDENSATE RETURN PUMPS
Type: Vertical centrifugal pump
Capacity: 22.7 m^3/hr
Differential Press.: 5.1 bar
Material of Construction: CS

NOTES:

1. SUPPORT FOR SLUG FLOW.
2. NOT USED.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EU UNLESS OTHERWISE STATED.
4. GOOSENECK TO BE REQUIRED.
5. COLD SIDE OUTLET VALVE TO BE TAGGED: "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
6. 3/4" WEEP HOLE.
7. LOCAL PRESSURE GAUGE TO BE IN VIEW FROM BYPASS.
8. LOCATE CONTROL VALVE WITHIN 3 m OF EU-D-73.
9. DELETED.
10. COORDINATE EU-L0020-V SIZING WITH EU-PR-036 SIZING. EU-L0020-V VALVE COEFFICIENT NOT TO EXCEED 17.
11. MOTOR WITH START/STOP LOCAL PUSH BUTTON
12. BLOC VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
13. FLANGED OR THREADED END VALVE.
14. TERMINATED WITH FLANGED ARRESTOR. /0

HOLDS:

1. CONTROL VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
2. RELIEF VALVE SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
4. DELETED. /0
52. BYPASS SIZE TO BE CONFIRMED WITH FINAL CONTROL VALVE SIZE.
53. RELIEF VALVE SUCTION LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.
54. RELIEF VALVE DISCHARGE LINE SIZE TO BE CONFIRMED WITH FINAL PR VENDOR INFORMATION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
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C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO
B0	30/06/2011	ISSUE FOR REVIEW	SWD	SNYM	NIKKO

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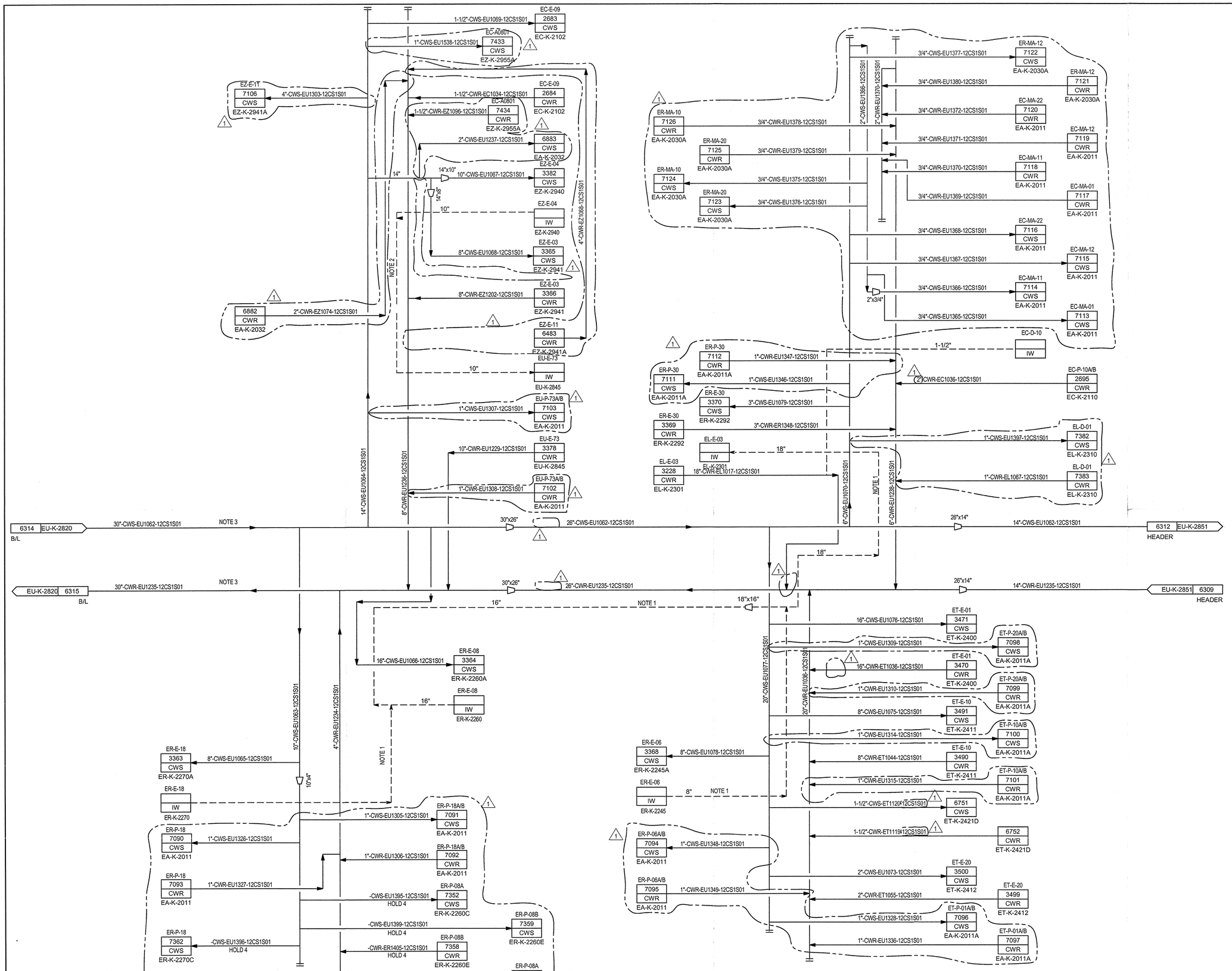
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
LP & MP CONDENSATE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2845	1 OF 1	0



NOTES:

1. FOR DUPLICATED LINES SEE P&ID EL-K-2310.
2. FOR DUPLICATED LINE SEE P&IDS EZ-K-2940 AND EU-K-2845.
3. ABOVE GROUND CWS AND CWR BRANCH LINES WILL BE CONNECTED TO THE TOP OF THE HEADER.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

47. DELETED.

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C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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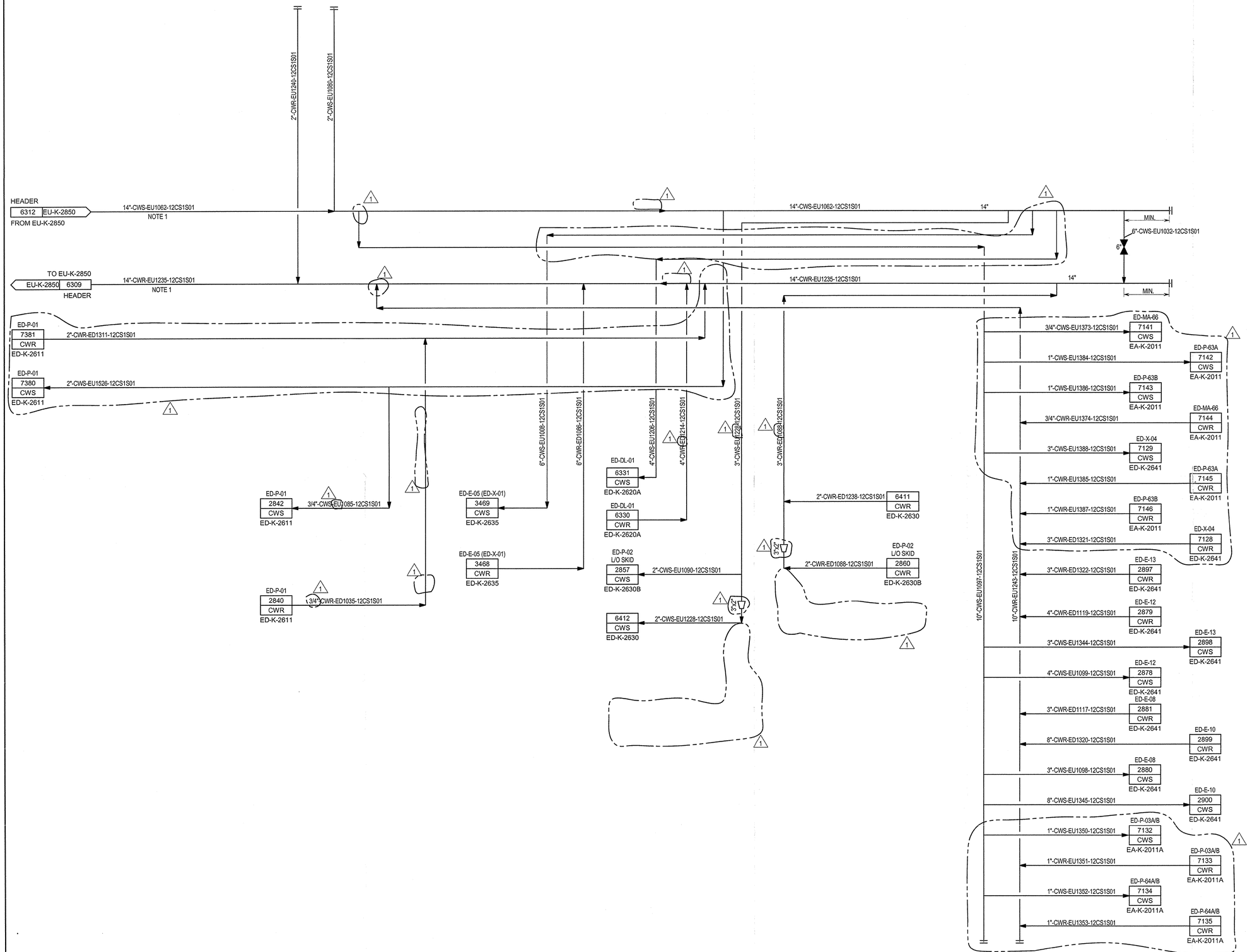
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
COOLING WATER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2850	1 OF 1	1



NOTES:

1. ABOVE GROUND CWS AND CWR BRANCH LINES WILL BE CONNECTED TO THE TOP OF THE HEADER.

HOLDS:

3. DELETED.

47. DELETED.

A. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

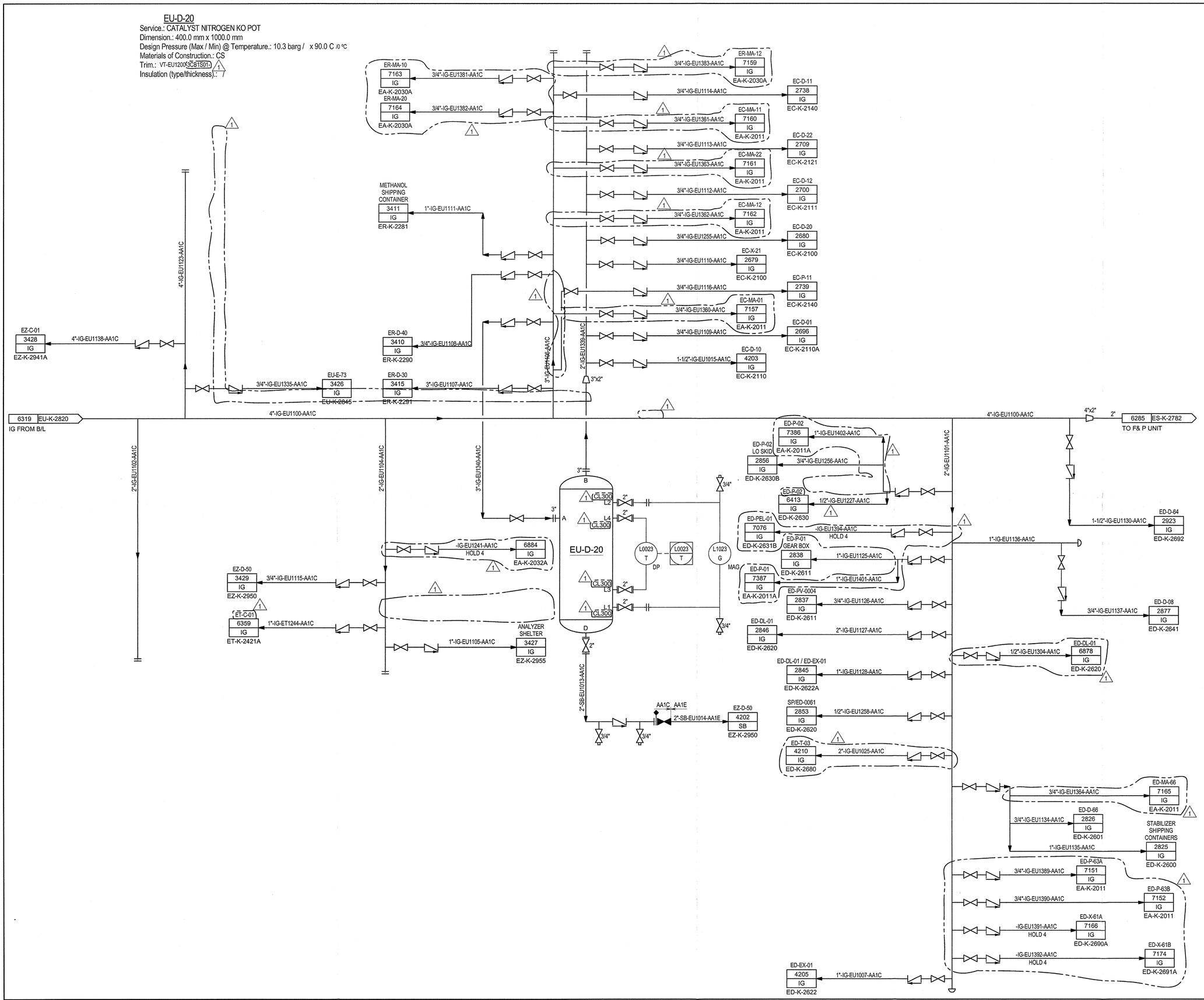
TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
COOLING WATER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2851	1 OF 1	1

EU-D-20

Service.: CATALYST NITROGEN KO POT
Dimension.: 400.0 mm x 1000.0 mm
Design Pressure (Max / Min) @ Temperature.: 10.3 barg / x 90.0 C /0 °C
Materials of Construction.: CS
Trim.: VT-EU1200-SC81S01-
Insulation (type/thickness).:



NOTES:

1. NOT USED.
2. REFER TO EU-K-2880A-B FOR THE LOCATION OF UTILITY STATION.
3. DELETED.
4. REFER TO DWG. Nº 00-K-2009 FOR TYPICAL DETAILS OF UTILITY STATIONS.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
34 DELETED.
47 DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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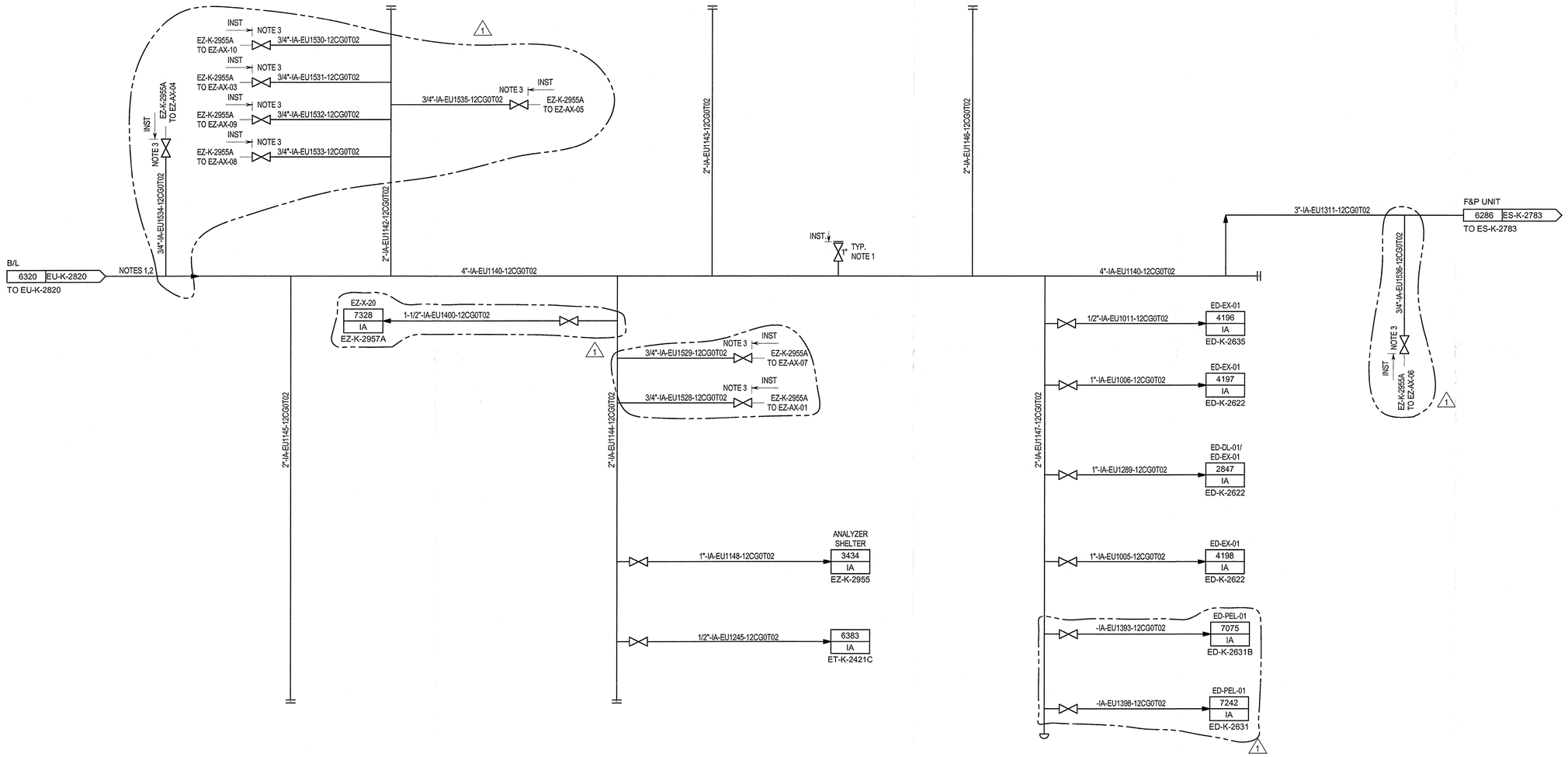
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
NITROGEN

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2860	1 OF 1	1



NOTES:

1. INSTRUMENT AIR VALVES (1" MINIMUM) TO BE LOCATED ON THE INSTRUMENT AIR HEADER WITHIN PROCESS AND UTILITY EVERY 6 METERS, AS A MINIMUM.
2. BRANCH LINES TO BE TAKEN FROM TOP OF THE HEADER.
3. THREADED END VALVE. VALVE SHALL BE INSTALLED CLOSE TO THE RACK. (1)

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C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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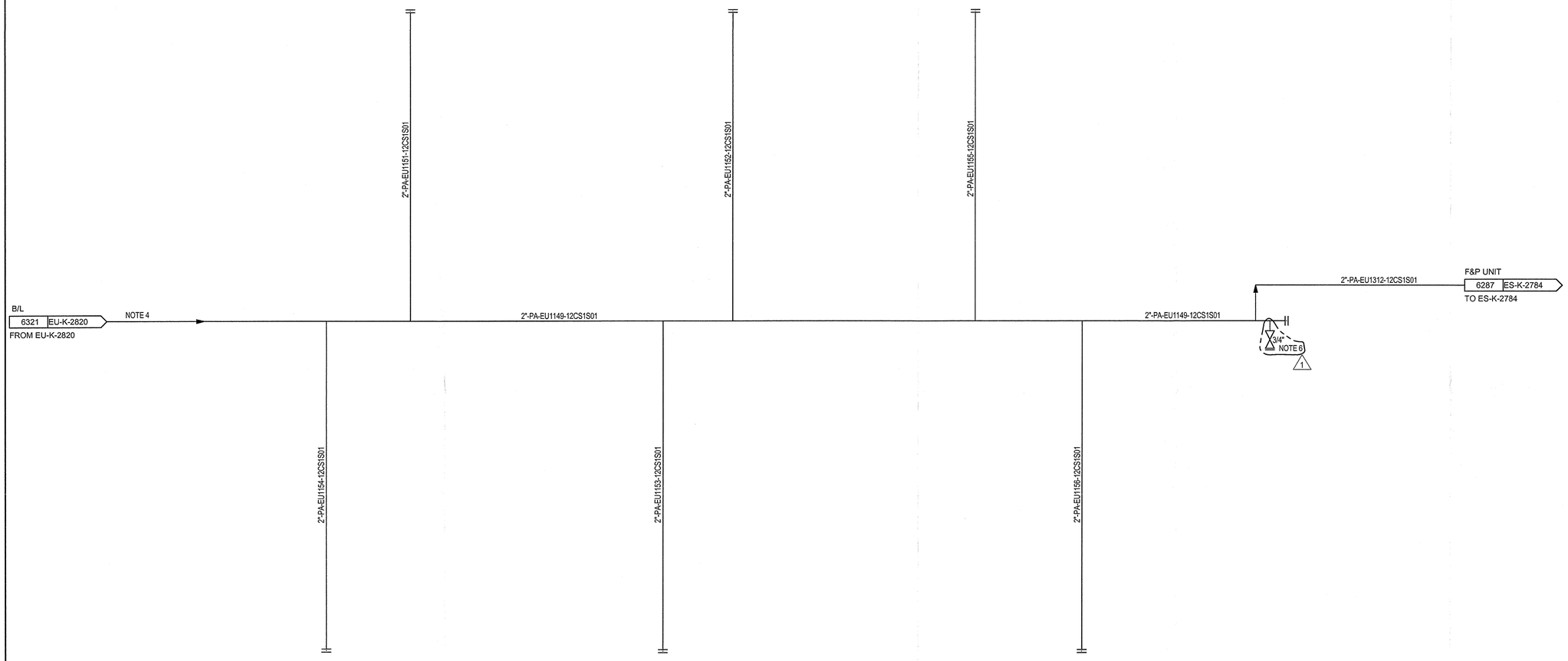
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
INSTRUMENT AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2865	1 OF 1	1



NOTES:

1. NOT USED.
2. REFER TO EU-K-2880A-E FOR THE LOCATION OF UTILITY STATION.
3. DELETED.
4. PLANT AIR BRANCH LINES TO BE LOCATED FROM TOP OF THE HEADER.
5. REFER TO DWG. Nº 00-K-2009 FOR TYPICAL DETAILS OF UTILITY STATIONS.
6. DRAIN VALVE TO BE LOCATED ACCESIBLE FROM GROUND LEVEL.

HOLDS:

34 DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
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C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Jubail, Kingdom of Saudi Arabia

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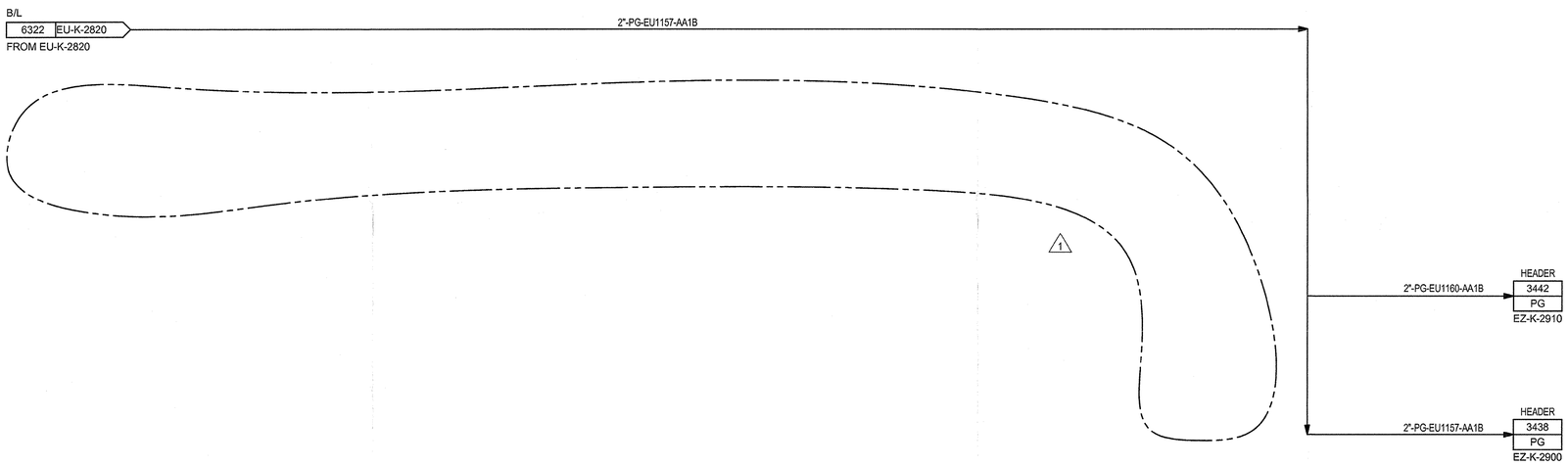
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
PLANT AIR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2870	1 OF 1	1



REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Jubail, Kingdom of Saudi Arabia

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TECNICAS REUNIDAS

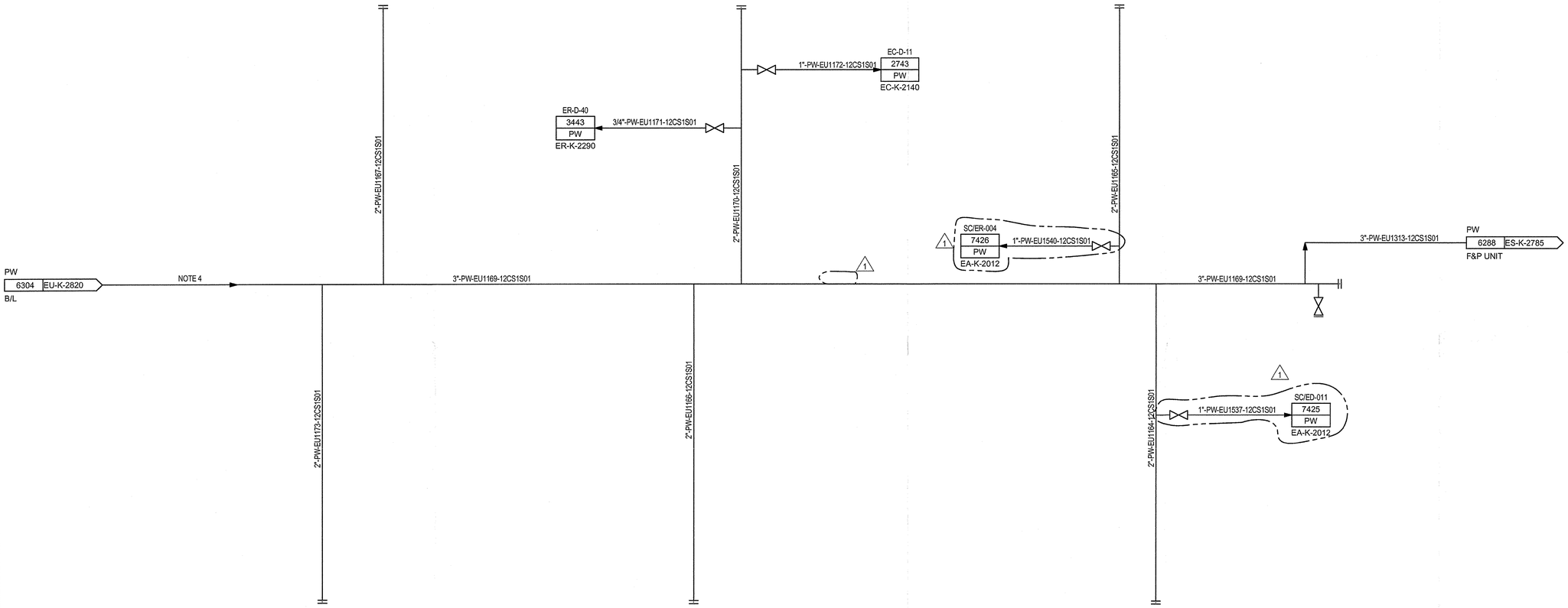
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
FUEL GAS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2872	1 OF 1	1



NOTES:

1. NOT USED.
2. REFER TO EU-K-2880A-E FOR THE LOCATION OF UTILITY STATION. (1)
3. DELETED.
4. PLANT WATER BRANCH LINES TO BE LOCATED FROM TOP OF THE HEADER.
5. REFER TO DWG. No. 00-K-2009 FOR TYPICAL DETAILS OF UTILITY STATIONS.

HOLDS:

34 DELETED.
47 DELETED. (1)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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TECNICAS REUNIDAS

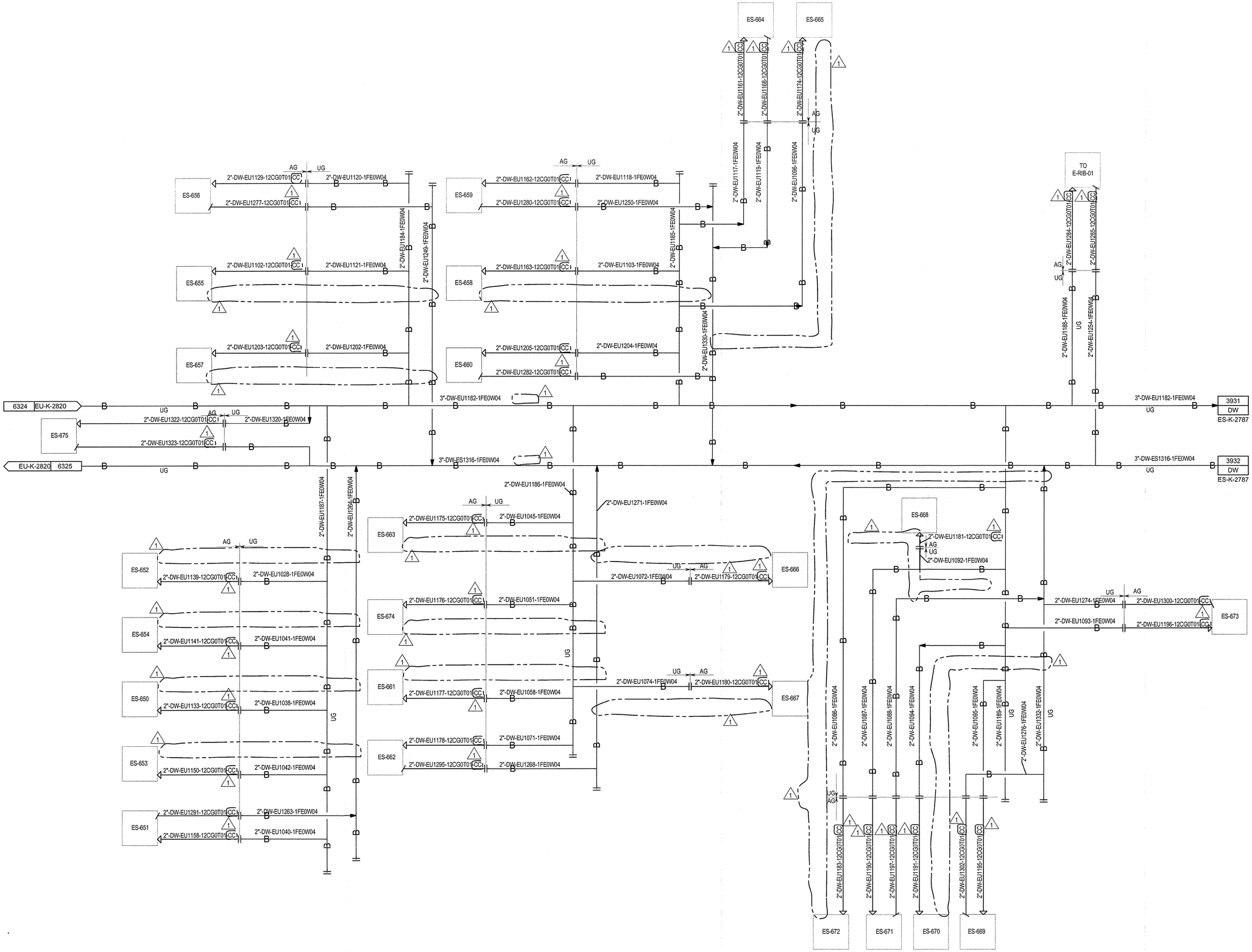
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
PLANT WATER

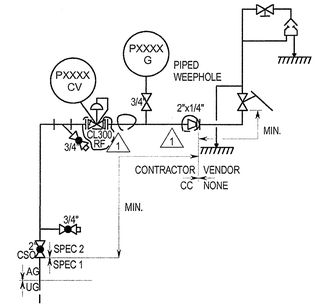
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2873	1 OF 1	1

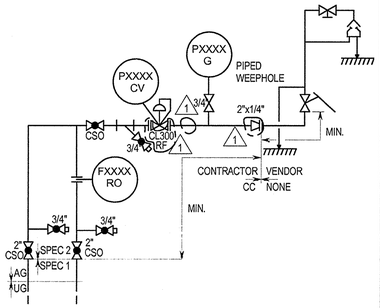


NOTES:

EYEWASH & SAFETY SHOWER CONFIGURATION FOR
1. EWSS NOT LOCATED AT END OF POTABLE WATER HEADER.
2. EWSS LOCATED <2.5m FROM POTABLE WATER SUPPLY HEADER.
3. FOR EWSS IDENTIFICATION CHART SEE EA-K-2020.
4. EWSS STATION NUMBER TO BE ASSIGNED BY OWNER.



EYEWASH & SAFETY SHOWER CONFIGURATION FOR
1. ELEVATED STATIONS.
2. EWSS LOCATED ≥2.5m FROM POTABLE WATER SUPPLY HEADER.
3. EWSS LOCATED AT END OF POTABLE WATER HEADER.
4. FOR EWSS IDENTIFICATION CHART SEE EA-K-2020.
5. EWSS STATION NUMBER TO BE ASSIGNED BY OWNER.



1. REFER TO DWG. NO. EA-P-5050 FOR THE LOCATION OF EYEWASH AND SAFETY SHOWER.
2. DELETED.

HOLDS:

4. DELETED.
35 DELETED.
62 DELTED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUE FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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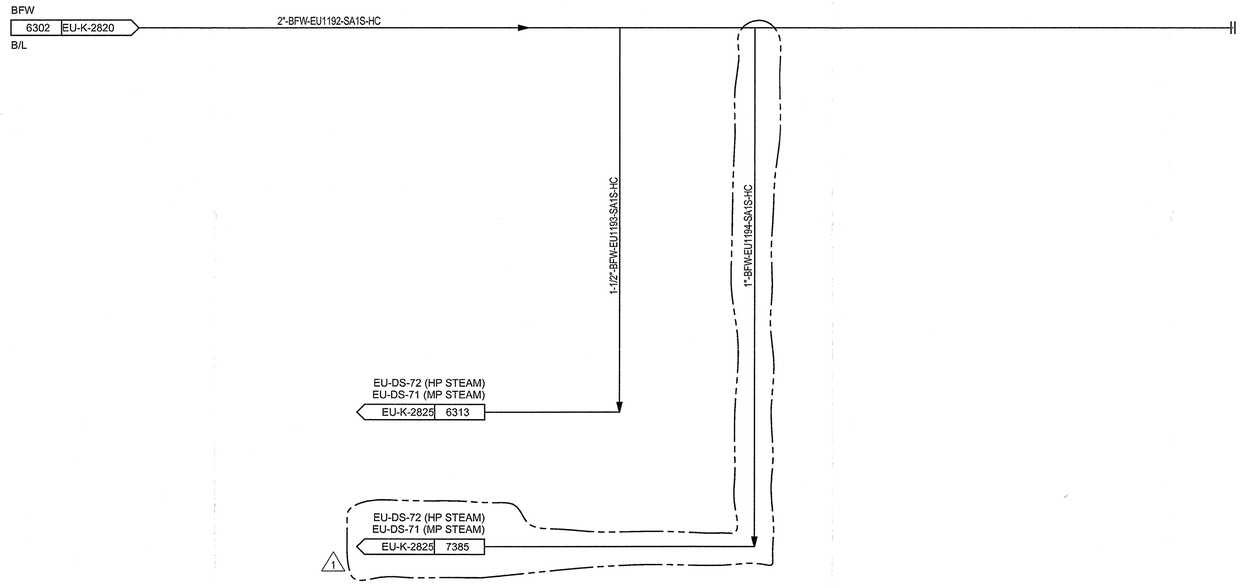
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
POTABLE WATER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2875	1 OF 1	1



REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/11/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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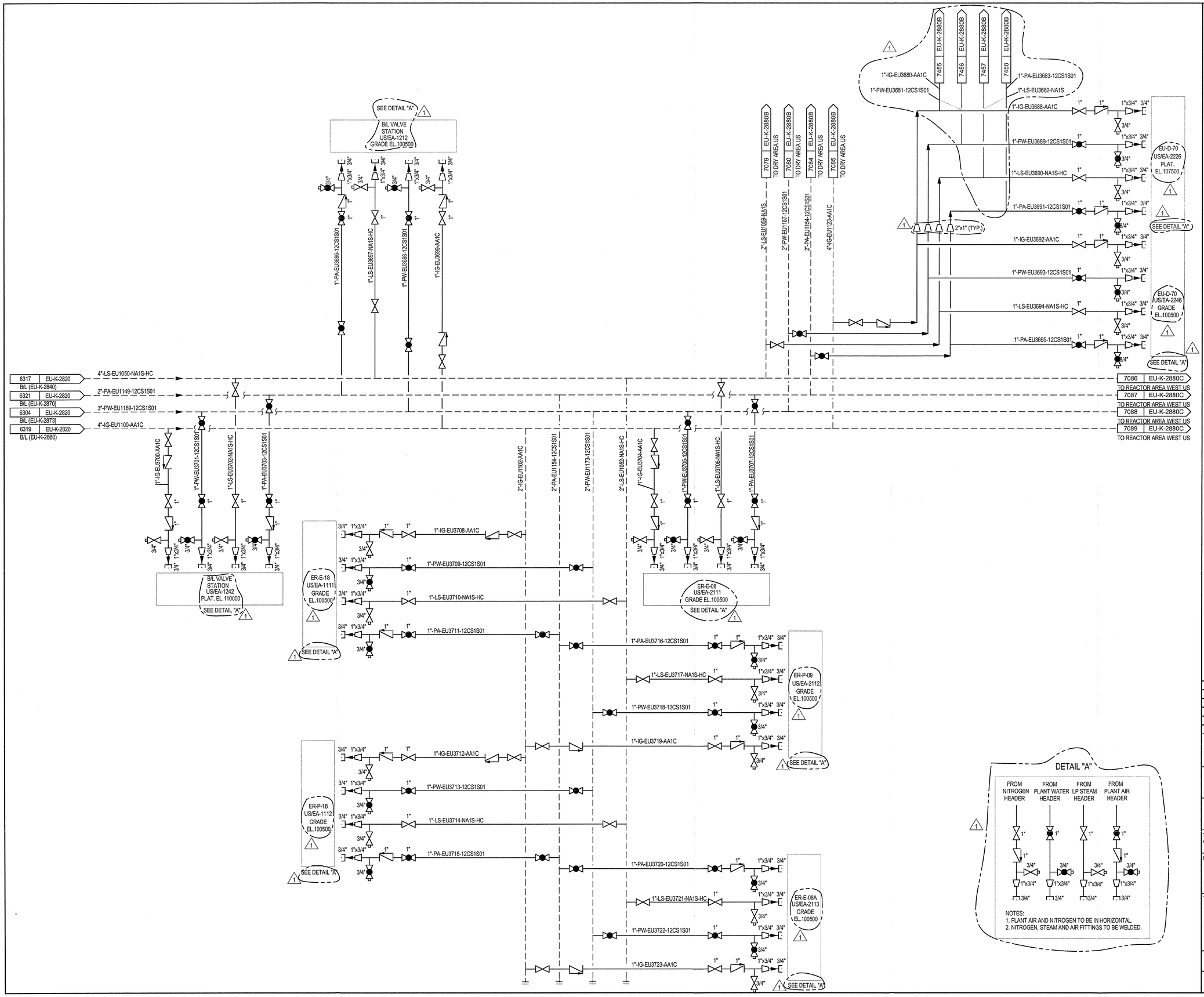
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
BOILER FEED WATER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2879	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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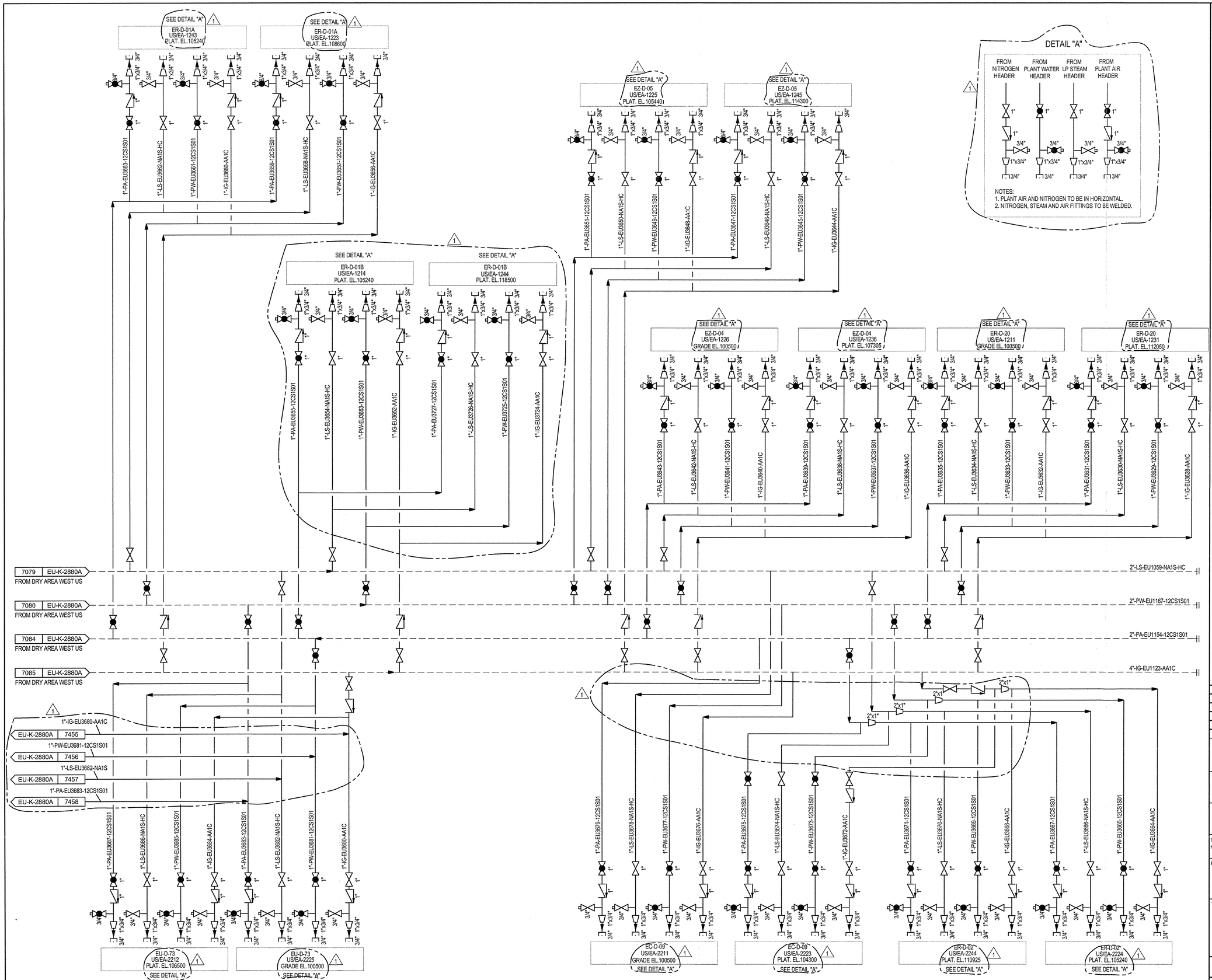
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
DRY AREA WEST UTILITY STATIONS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2880A	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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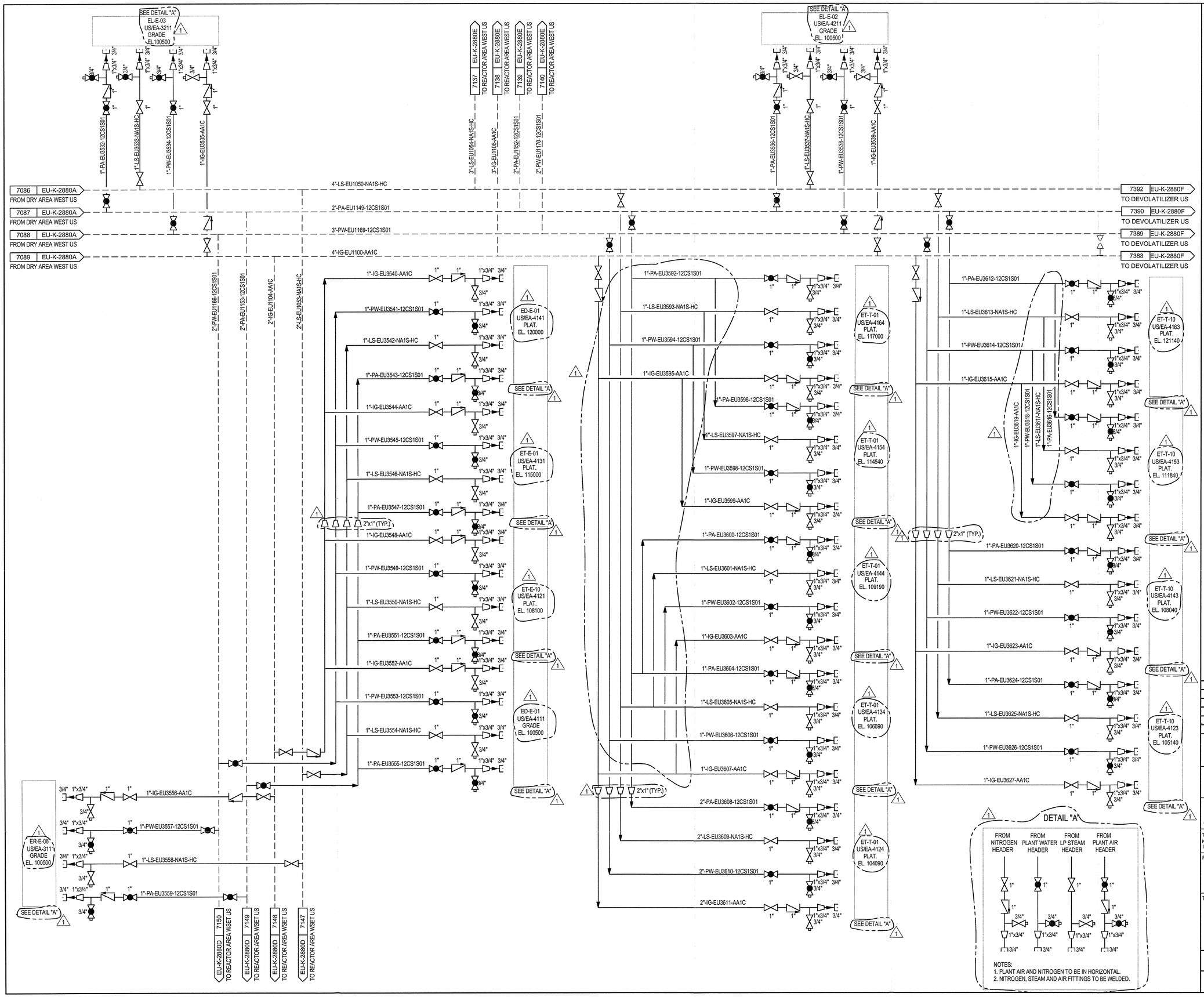
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
DRY AREA EAST UTILITY STATIONS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING N0.	SHEET NO.	REVISION
-	EU-K-2880B	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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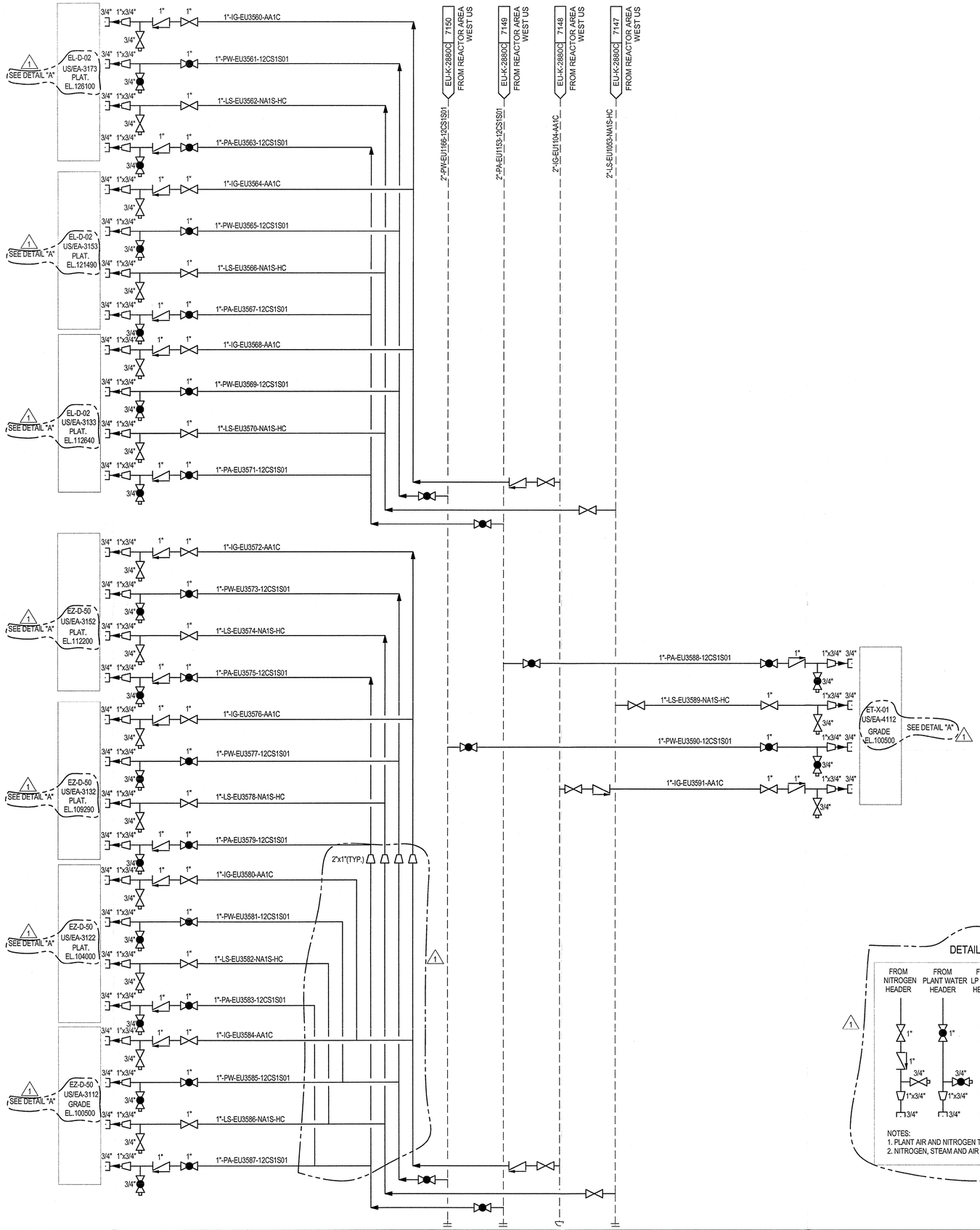
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
REACTOR AREA WEST UTILITY STATIONS (1/2)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2880C	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH "EU" UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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TECNICAS REUNIDAS

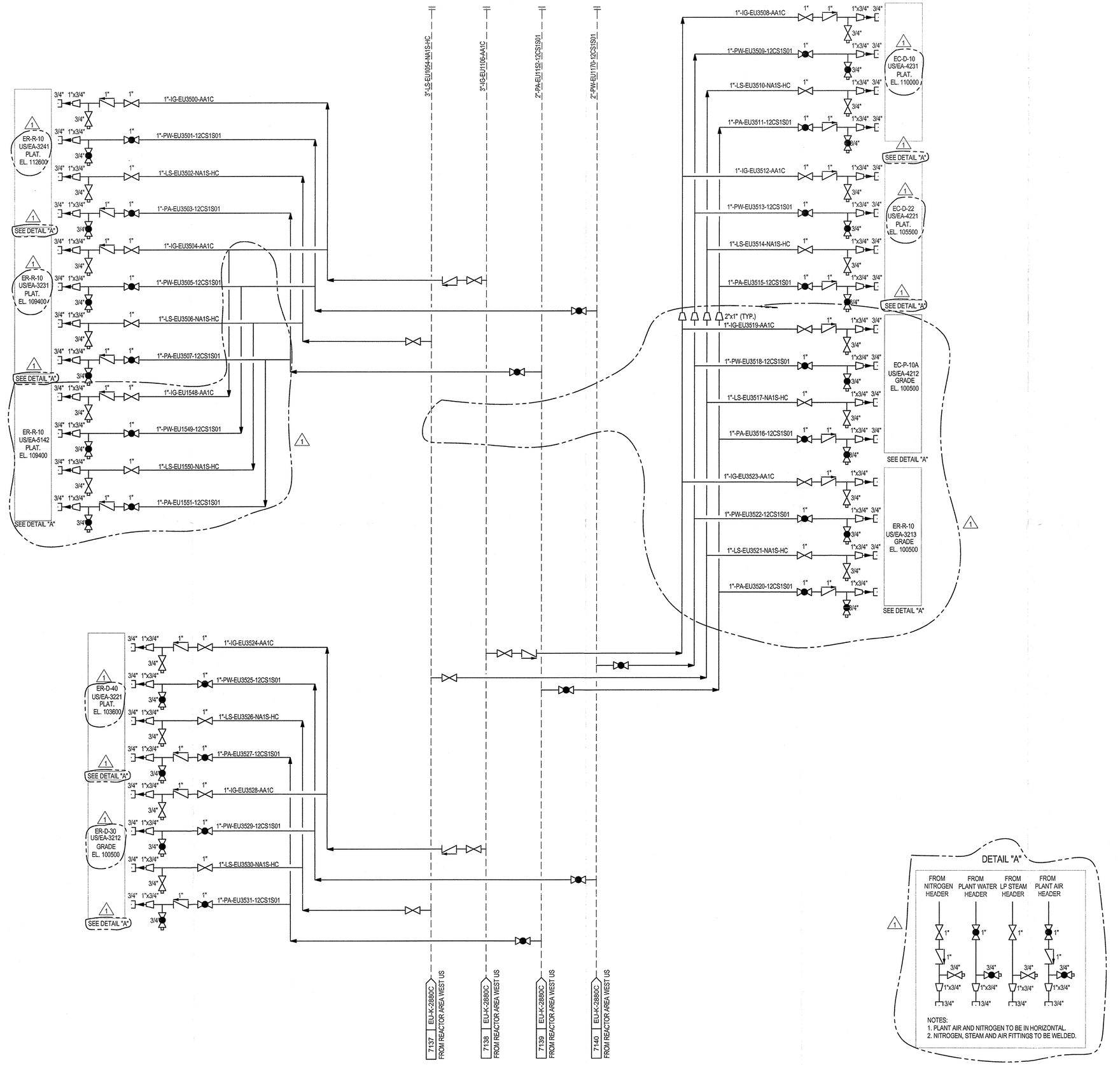
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
REACTOR AREA WEST UTILITY STATIONS (2/2)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2880D	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
REACTOR AREA EAST UTILITY STATIONS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EU-K-2880E	1 OF 1	1

7392 EU-K-2880C
FROM REACTOR AREA WEST US

7390 EU-K-2880C
FROM REACTOR AREA WEST US

7389 EU-K-2880C
FROM REACTOR AREA WEST US

7388 EU-K-2880C
FROM REACTOR AREA WEST US

4"-LS-EU1050-NA1S-HC → 7393 EU-K-2880G
TO F&P UNIT EU-K-2860

2"-PA-EU1149-12CS1S01 → 7394 EU-K-2880G
TO F&P UNIT EU-K-2860

3"-PW-EU1169-12CS1S01 → 7395 EU-K-2880G
TO F&P UNIT EU-K-2860

4"-IG-EU1100-AA1C → 7396 EU-K-2880G
TO F&P UNIT EU-K-2860

EL-D-01 US/EA-5131 PLATFORM 117.400
- 1"x3/4" 1"-IG-EU1440-AA1C
- 1"x3/4" 1"-PW-EU1428-12CS1S01
- 1"x3/4" 1"-LS-EU1404-NA1S-HC
- 1"x3/4" 1"-PA-EU1415-12CS1S01
SEE DETAIL "A"

EL-D-01 US/EA-5122 PLATFORM 108.800
- 1"x3/4" 1"-IG-EU1441-AA1C
- 1"x3/4" 1"-PW-EU1429-12CS1S01
- 1"x3/4" 1"-LS-EU1405-NA1S-HC
- 1"x3/4" 1"-PA-EU1417-12CS1S01
SEE DETAIL "A"

EL-D-01 US/EA-5111 PLATFORM 100.500
- 1"x3/4" 1"-IG-EU1442-AA1C
- 1"x3/4" 1"-PW-EU1430-12CS1S01
- 1"x3/4" 1"-LS-EU1408-NA1S
- 1"x3/4" 1"-PA-EU1418-12CS1S01
SEE DETAIL "A"

EL-DL-01 US/EA-5112 PLATFORM 100.500
- 1"x3/4" 1"-IG-EU1443-AA1C
- 1"x3/4" 1"-PW-EU1431-12CS1S01
- 1"x3/4" 1"-LS-EU1406-NA1S-HC
- 1"x3/4" 1"-PA-EU1419-12CS1S01
SEE DETAIL "A"

2"-PW-EU1417-12CS1S01 · 2"-PA-EU1416-12CS1S01 · 2"-IG-EU1439-AA1C · 2"-LS-EU1403-NA1S-HC

ED-T-03 US/EA-51– PLATF. 122900
- 1"x3/4" 1"-IG-EU1544-AA1C
- 1"x3/4" 1"-PW-EU1545-12CS1S01
- 1"x3/4" 1"-LS-EU1546-NA1S-HC
- 1"x3/4" 1"-PA-EU1547-12CS1S01
SEE DETAIL "A"

ED-D-01 US/EA-5141 PLATFORM 120.100
- 1"x3/4" 1"-PA-EU1421-12CS1S01
- 1"x3/4" 1"-LS-EU1407-NA1S-HC
- 1"x3/4" 1"-PW-EU1433-12CS1S01
- 1"x3/4" 1"-IG-EU1445-AA1C
SEE DETAIL "A"

ED-D-66 US/EA-5115 GRADE 100.500
- 1"x3/4" 1"-IG-EU1449-AA1C
- 1"x3/4" 1"-PW-EU1437-12CS1S01
- 1"x3/4" 1"-LS-EU1413-NA1S-HC
- 1"x3/4" 1"-PA-EU1425-12CS1S01

ED-T-03 AND ED-B-61A/B US/EA-5142 PLATFORM 113.800
- 1"x3/4" 1"-PA-EU1424-12CS1S01
- 1"x3/4" 1"-LS-EU1411-NA1S-HC
- 1"x3/4" 1"-PW-EU1436-12CS1S01
- 1"x3/4" 1"-IG-EU1446-AA1C
SEE DETAIL "A"

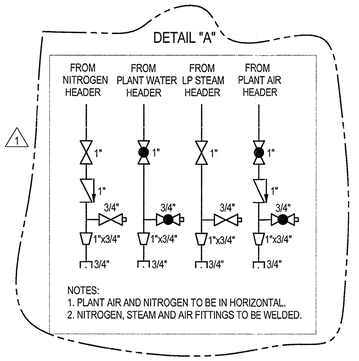
ED-P-66A/B US/EA-5113 CONTAINER ESTABILIZER GRADE 100.500
- 1"x3/4" 2"x1" 1"-IG-EU1450-AA1C
- 1"x3/4" 2"x1" 1"-PW-EU1438-12CS1S01
- 1"x3/4" 2"x1" 1"-LS-EU1414-NA1S-HC
- 1"x3/4" 2"x1" 1"-PA-EU1426-12CS1S01

ED-T-03 AND ED-B-62A/B US/EA-5132 PLATFORM 110.400
- 1"x3/4" 1"-PA-EU1423-12CS1S01
- 1"x3/4" 1"-LS-EU1410-NA1S-HC
- 1"x3/4" 1"-PW-EU1435-12CS1S01
- 1"x3/4" 1"-IG-EU1447-AA1C
SEE DETAIL "A"

ED-X-04 US/EA-5114 GRADE 100.500
- 1"x3/4" 1"-PA-EU1420-12CS1S01
- 1"x3/4" 1"-LS-EU1412-NA1S-HC
- 1"x3/4" 1"-PW-EU1432-12CS1S01
- 1"x3/4" 1"-IG-EU1444-AA1C
SEE DETAIL "A"

ED-T-03 AND ED-P-63A/B US/EA-5121 PLATFORM 107.300
- 1"x3/4" 1"-PA-EU1422-12CS1S01
- 1"x3/4" 1"-LS-EU1409-NA1S-HC
- 1"x3/4" 1"-PW-EU1434-12CS1S01
- 1"x3/4" 1"-IG-EU1448-AA1C
SEE DETAIL "A"

DETAIL "A"



NOTES:
1. PLANT AIR AND NITROGEN TO BE IN HORIZONTAL.
2. NITROGEN, STEAM AND AIR FITTINGS TO BE WELDED.

NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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Jubail, Kingdom of Saudi Arabia

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al jubail petrochemical co.

TECNICAS REUNIDAS

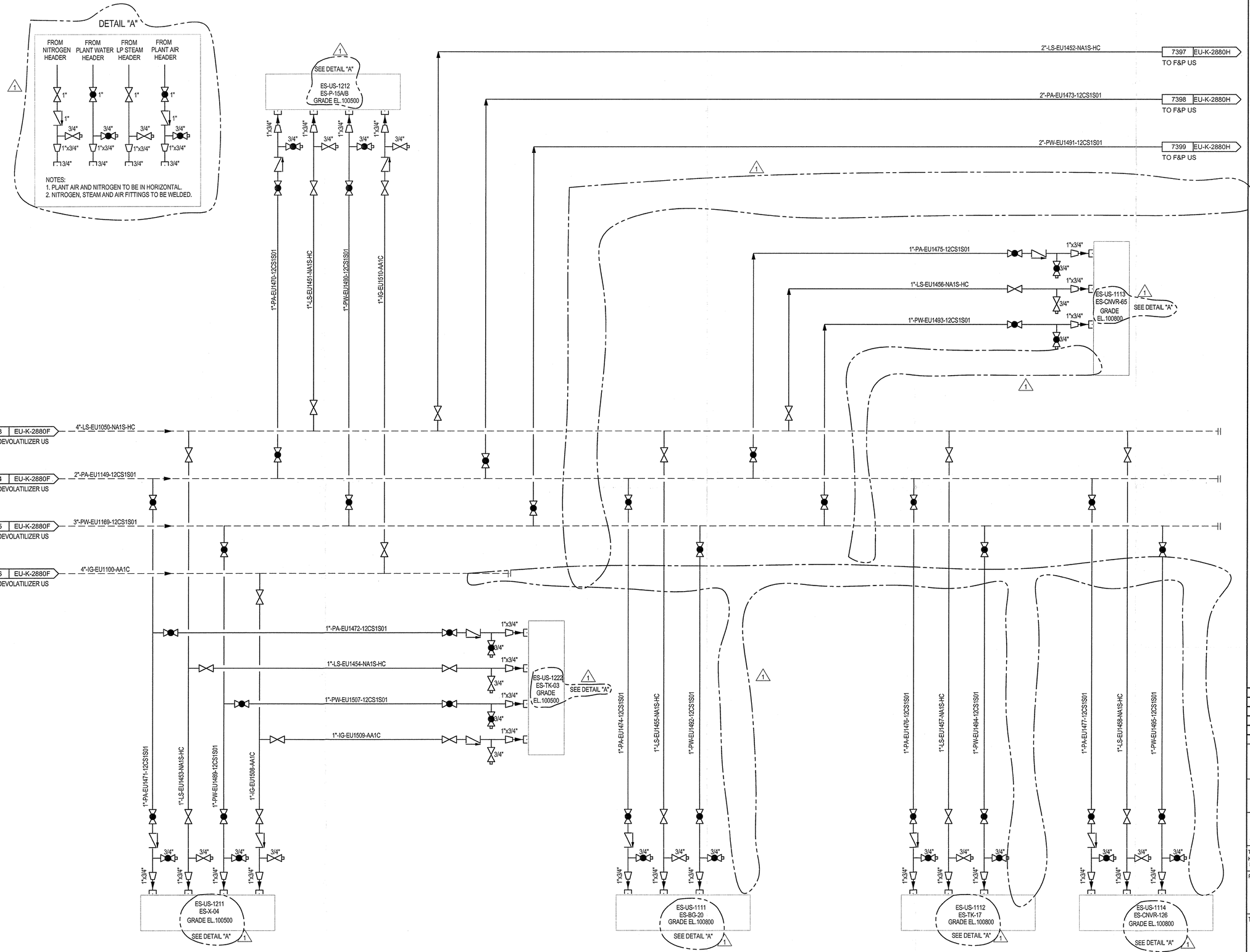
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
DEVOLATILIZER UTILITY STATIONS

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EU-K-2880F	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

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Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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al jubail petrochemical co.

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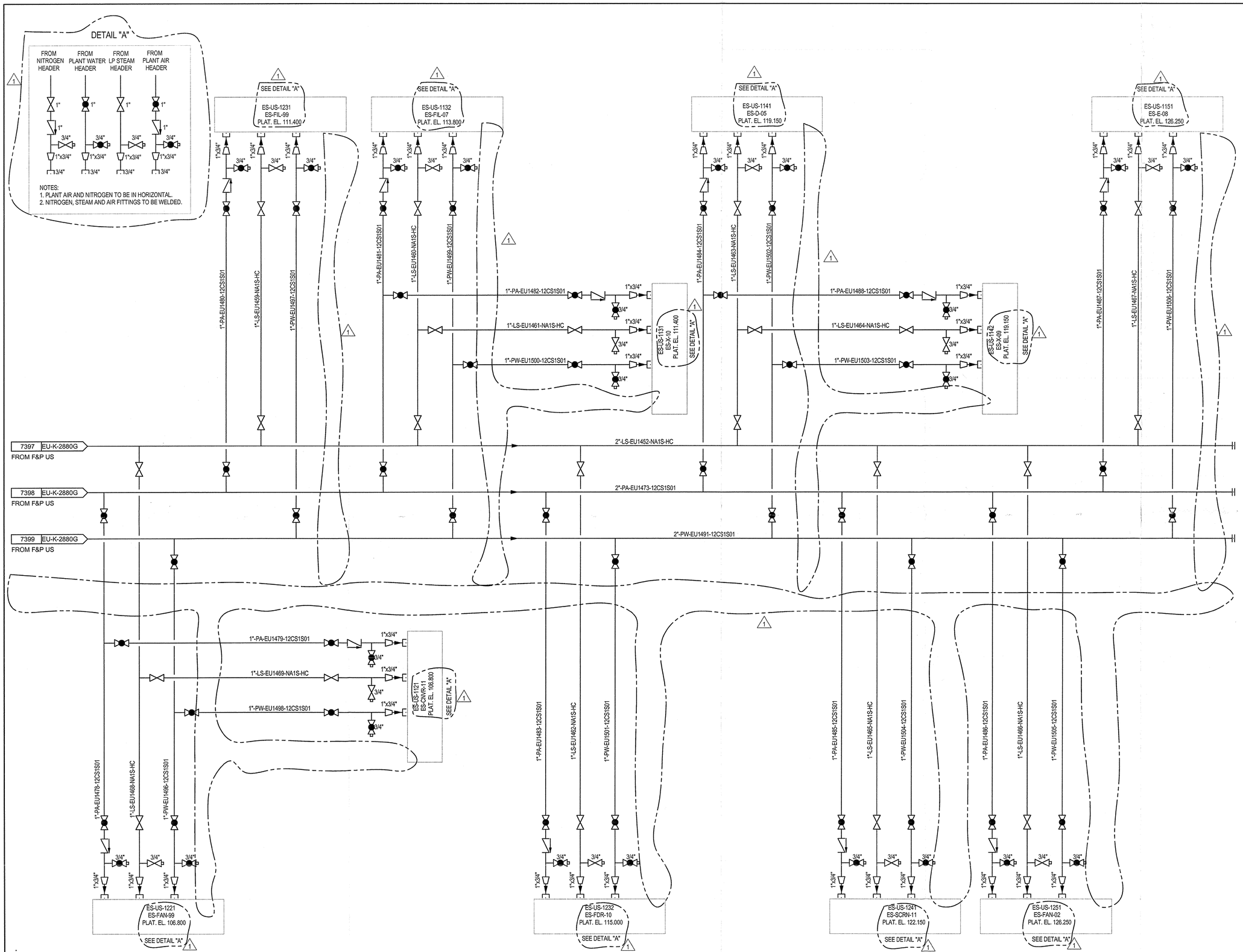
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
F & P UTILITY STATIONS (1/2)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2880G	1 OF 1	1



NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH 'EU' UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	01/08/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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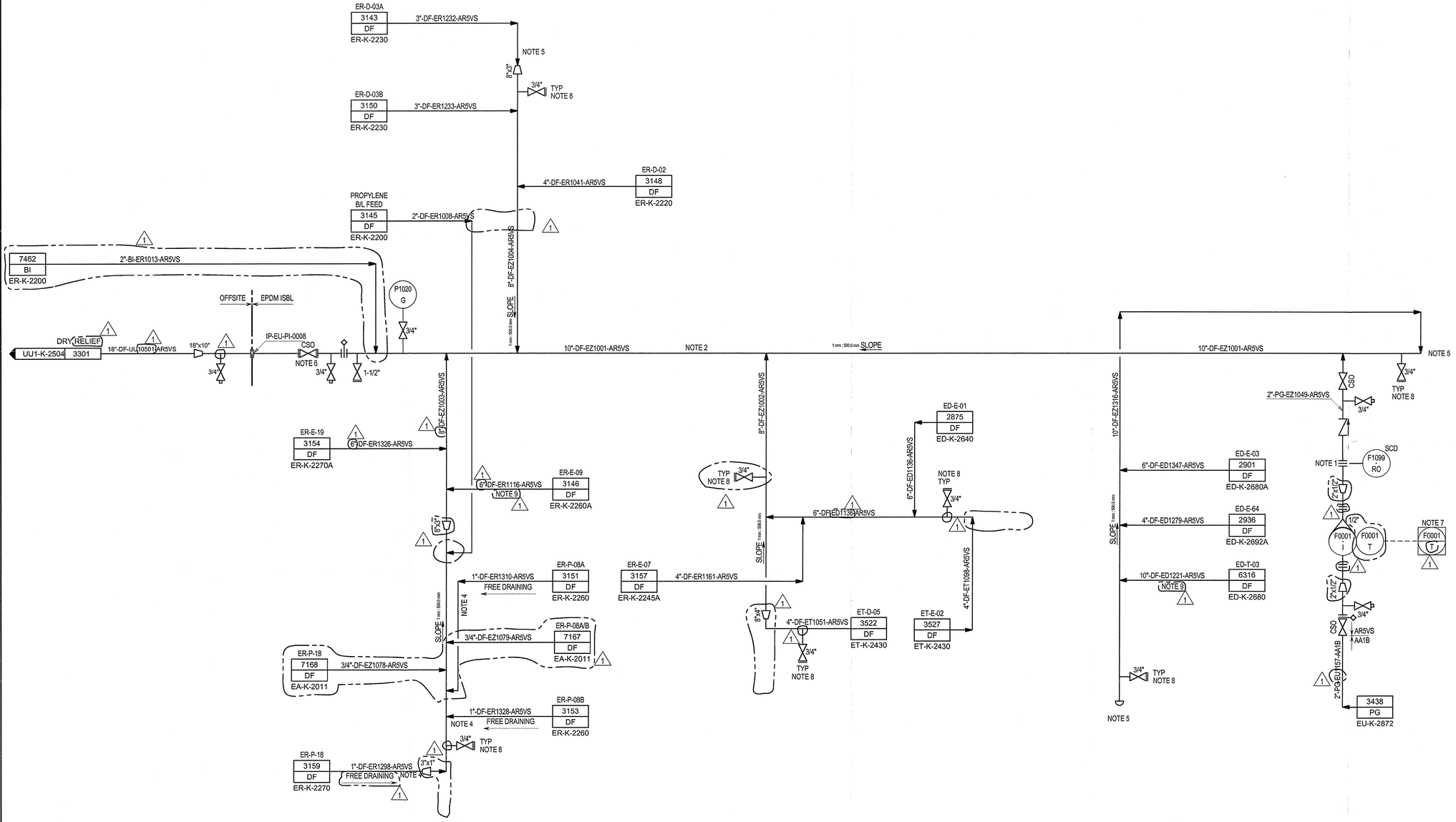
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
UTILITIES
F & P UTILITY STATIONS (2/2)

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EU-K-2880H	1 OF 1	1



NOTES:

1. RO TO PROVIDE CONTINUOUS SWEEP TO PURGE FLARE HEADER.
2. ALL PIPING IN PRESSURE RELIEF SYSTEM SHALL BE SLOPED.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
4. CHECK VALVE SHOWN IN PROCESS P&ID.
5. PIPE CONNECTION TO THE FLARE HEADER AND SUBHEADER SHALL BE DONE AT 45° IN THE FLARE HEADER FLOW DIRECTION.
6. GATE VALVES SHALL BE INSTALLED WITH THE VALVE STEM IN THE HORIZONTAL POSITION.
7. PROVIDE LOW FLOW ALARM IN DCS.
8. 3/4" BLOCK VALVE CONNECTION EVERY 30 M IN HEADER (ON TOP).
9. TWO PHASES FLOW. POSSIBLE UNSTABLE FLOW. 1

HOLDS:

6. DELETED. 1

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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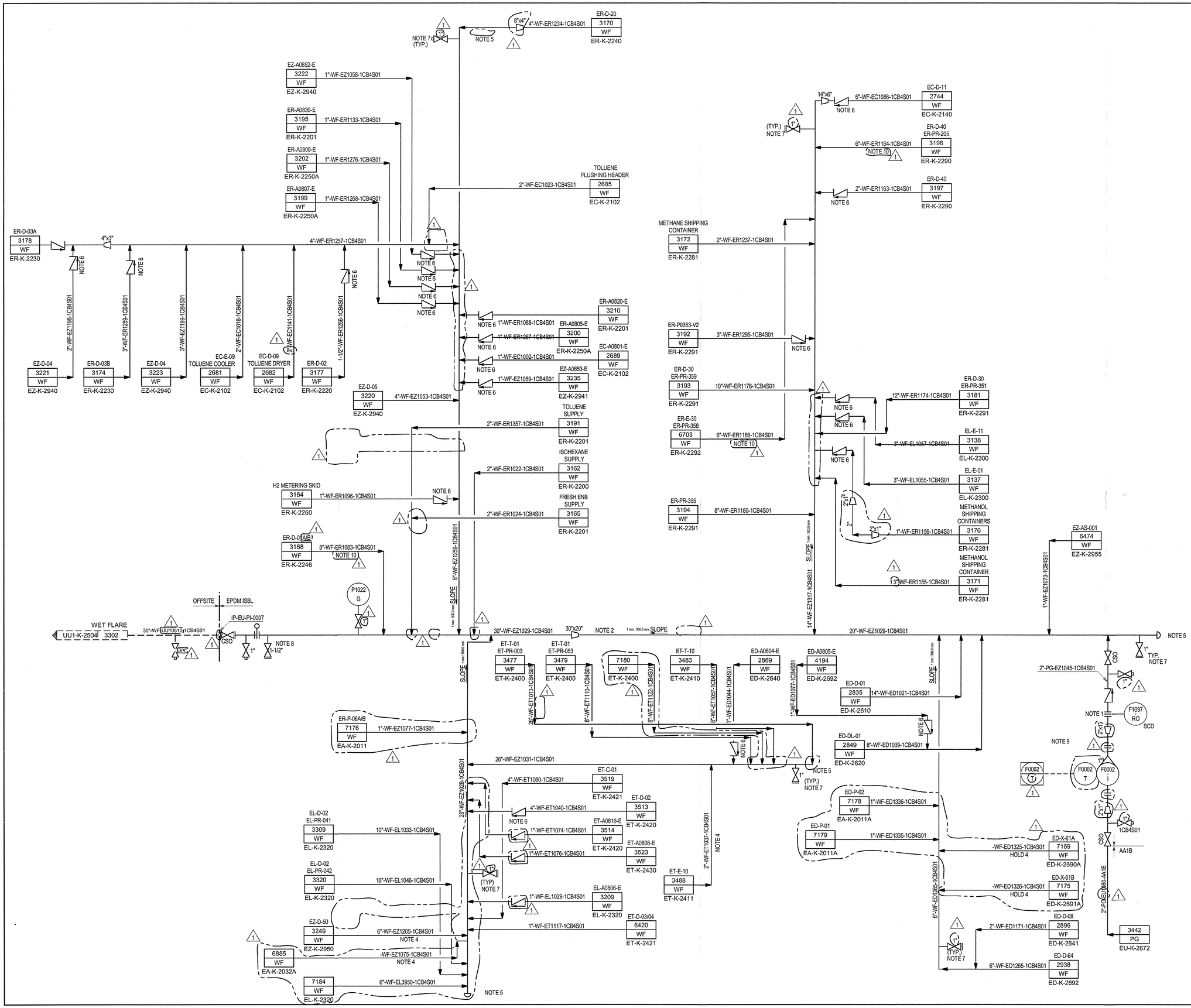
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
DRY FLARE HEADER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2900	1 OF 1	1



NOTES:

1. RO TO PROVIDE CONTINUOUS SWEEP GAS TO PURGE FLARE HEADER.
2. ALL PIPING IN PRESSURE RELIEF SYSTEM SHALL BE SLOPED.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
4. CHEK VALVE SHOWN IN PROCESS P&ID.
5. PIPE CONNECTION TO THE FLARE HEADER AND SUBHEADER SHALL BE DONE AT 45° IN THE FLARE HEADER FLOW DIRECTION.
6. CHECK VALVE HAS TO BE ACCESSIBLE.
7. 1" BLOCK VALVE CONNECTION EVERY 30 m IN HEADER (ON TOP).
8. GATE VALVE SHALL BE INSTALLED WITH THE STEM IN THE HORIZONTAL POSITION.
9. PROVIDE LOW FLOW ALARM IN DCS.
10. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.

HOLDS:

3. DELETED.
4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.
6. DELETED.
47. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	AAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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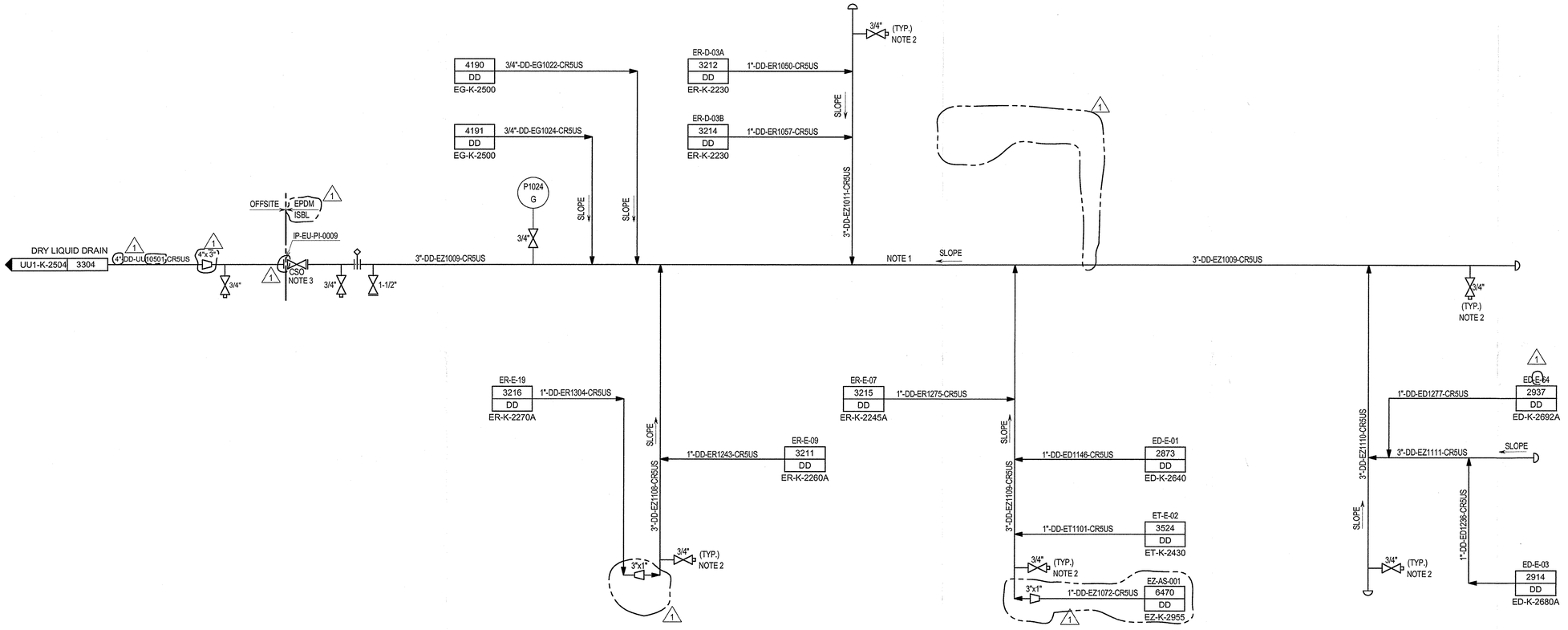
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
WET FLARE HEADER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2910	1 OF 1	1



NOTES:

1. ALL PIPING SHALL BE SLOPED.
2. 3/4" BLOCK VALVE CONNECTION EVERY 30 m. IN HEADER.
3. GATE VALVES SHALL BE INSTALLED WITH THE VALVE STEM IN THE HORIZONTAL POSITION.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	AAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
DRY LIQUID DRAIN HEADER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EZ-K-2930	1 OF 1	1

EZ-E-04 NOTE 6

Service: DRYER REGENERATION COOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 1221 kW
Surface Area: 191 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 90.0 C /-48 °C
Tube Design Pressure (Max / Min) @ Temperature.: 34.7 barg / x 120.0 C /0 °C
Materials of Construction (Shell/Tubes): CS / LTCS
Trim (Shell/Tubes): - / VT-EZ1061-3CB1S01-
Insulation (type/thickness): PPI (SHELL: 25mm / CHANNEL: 25mm)
REGEN DESIGN (SHELL): D.P.: 11 barg / D.T.: 300/0 °C

EZ-D-04 NOTE 6

Service.: DRYER REGENERATION K.O. DRUM
Dimension.: 1500.0 mm x 3750.0 mm
Design Pressure (Max / Min) @ Temperature.: 45.0 barg / -1.0 barg x 90.0 C /-48 °C
Materials of Construction.: LTCS
Trim.: VT-EZ1062-3CA2S85-
Insulation (type/thickness).: /
REGEN DESIGN: D.P.: 11 barg / D.T.: 300/0 °C

EZ-D-05

Service.: REGENERATION GAS DRYER
Dimension.: 2300.0 mm x 8000.0 mm
Design Pressure (Max / Min) @ Temperature.: 45.0 barg / -1.0 barg x 90.0 C /-48 °C
Materials of Construction.: LTCS
Trim.: VT-EZ1063-3CA2S85-HC
Insulation (type/thickness).: HC / 90.0 mm NOTE 12
REGEN DESIGN: D.P.: 11 barg / D.T.: 300/0 °C

REGENERATION GAS 3224 ER-K-2230 FROM ER-D-01A/B ER-D-02, ER-D-03A/B ER-D-20 & EC-D-09 — 10"-P-ER1087-3CA2S85-PPI

RECYCLE GAS 3239 EZ-K-2941 FROM EZ-C-01 DRYER REGENERATION — 10"-P-EZ1051-3CA2S85 MINIMUM FLOW

7379 ER-K-2230 — 10"-P-ER1064-3CA2S85-PPI

EZ-E-04

EZ-D-04

EZ-D-05

TO EU-E-73 CONDENSATE CONDENSER 3355 IW EU-K-2845 — 10"-IW-EZ1027-3CB1S01 / 10"-IW-EZ1197-12CS1S01

3382 CWS EU-K-2850 — 10"-CWS-EZ1026-3CB1S01 / 10"-CWS-EZ1054-12CS1S01 / 10"-CWS-EU1067-12CS1S01

SIZE: 1-1/2"P2" SET AT 45.0 barg — PR053 — 3"x2" — 3"-WF-EZ1199-1CB4S01 — 3223 WF EZ-K-2910

2"-WF-EZ1046-3CA2S85 — 2"-WF-EZ1198-1CB4S01 — 3221 WF EZ-K-2910

SIZE: 1"D2" SET AT 45.0 barg — PR055 — 4"x2" — 4"-WF-EZ1053-1CB4S01 — 3220 WF EZ-K-2910

REGENERATION GAS EZ-K-2941 3240 FROM EZ-E-02/EZ-E-03 DRYER REGENERATION — 10"-P-EZ1017-3CA2S85-HC

2"-P-EZ1039-3CA2S85 — 10"-P-EZ1024-3CA2S85 — 10"-P-EZ1024-3CA2S85-HC — 2"-P-EZ1258-3CA2S85-HC — 10"-P-EZ1032-3CA2S85 — 10"-P-EZ1037-3CA2S85-PPI — 10"-P-EZ1035-3CA2S85 — 10"-P-EZ1038-3CA2S85-HC — 10"-P-EZ1037-3CA2S85-HC

REGENERATION GAS 3244 EZ-K-2942 TO EZ-C-01 DRYER REGENERATION — 10"-P-EZ1032-3CA2S85

DRAIN EZ-K-2950 3276 TO EZ-D-50 MIXED OIL DRUM — 2"-P-EZ1025-3CB2S01 — 2"-P-EZ1036-3CA2S85

3CB2S01 3CA2S85

NOTES:

1. ALL VALVES ASSOCIATED WITH THE DRYER REGEN SYSTEM LOCATED AT GRADE IN AN ERGONOMIC ARRANGEMENT.
2. BREAK OUT SPOOL FOR DESSICANT LOADING.
3. Y STRAINERS TO HAVE 100 MESH SCREEN.
4. HOSE CONNECTION.
5. PI ADDED FOR FLEXIBILITY TO PURGE ON PRESSURE CONTROL AND ADD N2 ON FLOW CONTROL.
6. THE DESIGN PRESSURE OF THE DRYER REGENERATION SYSTEM IS SET TO MATCH THE HIGHEST DESIGN PRESSURE OF ANY OF THE PROCESS DRYERS. THIS IS DONE TO AVOID POTENTIAL OVERPRESSURE OF THE DRYER REGENERATION SYSTEM FROM THE PROCESS DRYERS.
7. STEAM CONNECTION FOR DESSICANT DEACTIVATION.
8. VALVES "CSO" TO ENSURE COOLING WATER LINE TO PROVIDE HEATING EFFECT FOR CONTINGENCY IF COLD PROPYLENE LEAKED INTO DRYER REGENERATION SYSTEM.
9. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
10. NOT USED.
11. LT FOR SIS AND DCS SHALL HAVE THE SAME RANGE.
12. FIRE RESISTANT INSULATION. A CAUTION SIGN SHOULD BE PROVIDED, THAT SAYS "CAUTION - SIZING OF PR VALVE TAKES CREDIT FOR INSULATION. DO NOT REMOVE OR MODIFY WITHOUT APPROVAL."
13. DELETED.
14. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW HORIZONTAL.
15. THREADED END VALVE.
16. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.
17. ANALYZER LOCATED IN RACK EZ-AX-08 SEE DETAIL IN P&ID EZ-K-2955A.

HOLDS:

53 DELETED.
54 DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	SSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	SSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	SSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	SSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
DRYER REGENERATION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2940	1 OF 1	1

EZ-E-02

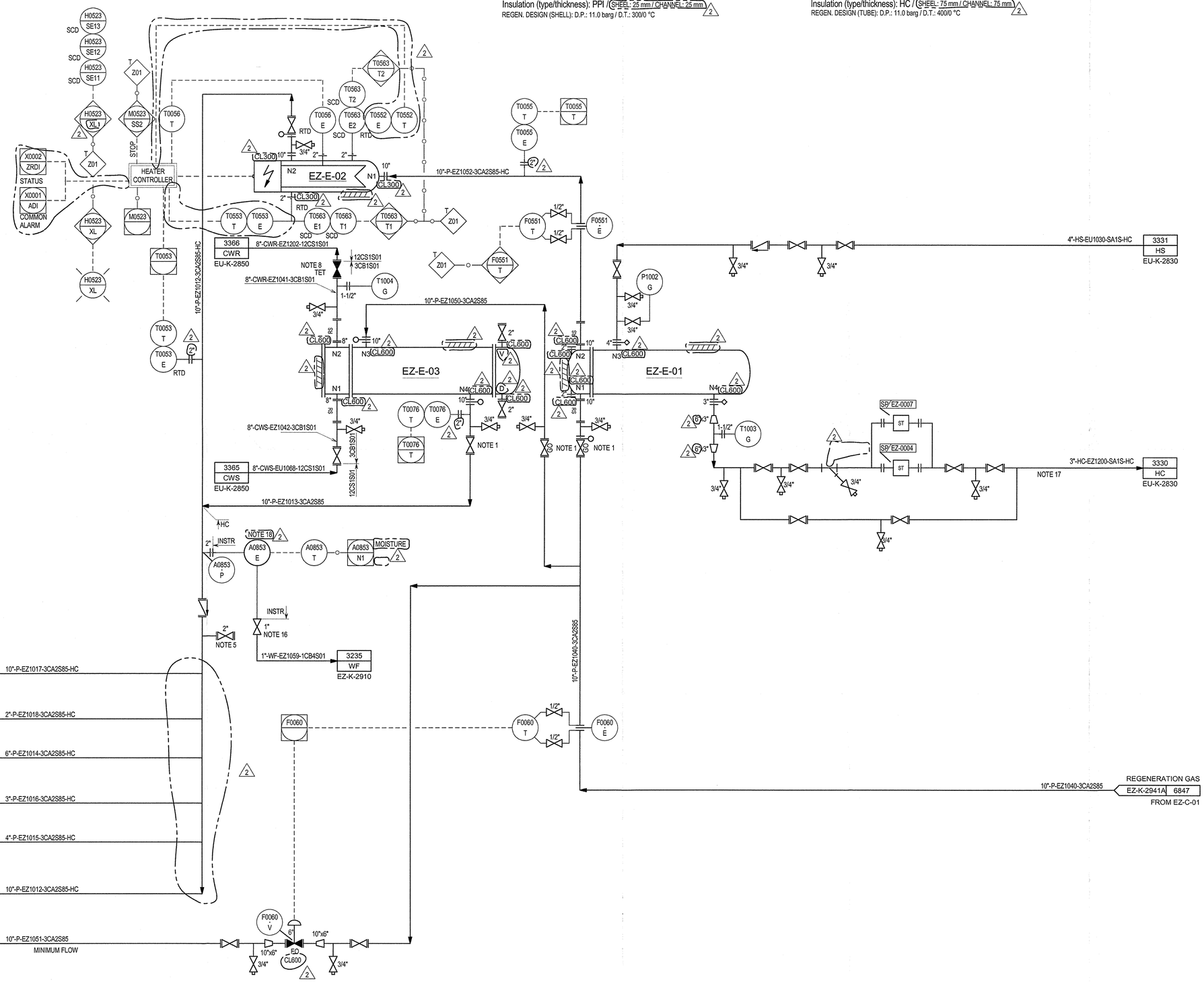
Service: DRYER REGENERATION ELECTRIC HEATER
Type:
Heat Duty: 87 kW
Materials of Construction: AC15
D.P.: 45.0 barg x 90 ºC/-48 ºC
REGEN. DESIGN: D.P.: 11.0 barg / D.T.: 300/0 ºC
TRIM: VT-EZ1064-3CA2S85-HC
(INSULATION TYPE/THICKNESS): HC / SHELL: 50 mm / CHANNEL: NONE

EZ-E-03

Service: DRYER REGENERATION COMPRESSOR AFTERCOOLER
Type: TEMA shell type E Shell & Tube heat exchanger
Heat Duty: 284 kW
Surface Area: 94 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 90.0 C /-48ºC
Tube Design Pressure (Max / Min) @ Temperature.: 34.7 barg / x 91.0 C /0ºC
Materials of Construction (Shell/Tubes): AC15 / AC15
Trim (Shell/Tubes): - / VT-EZ1065-3CB1S01-PPI
Insulation (type/thickness): PPI / (SHELL: 25 mm / CHANNEL: 25 mm)
REGEN. DESIGN (SHELL): D.P.: 11.0 barg / D.T.: 300/0 ºC

EZ-E-01

Service: DRYER REGENERATION STEAM HEATER
Type: TEMA shell type E Shell & Tube heat exchanger BEU
Heat Duty: 1248 kW
Surface Area: 72 m^2
Shell Design Pressure (Max / Min) @ Temperature.: 51.0 barg / -1.0 barg x 425.0 C /0ºC
Tube Design Pressure (Max / Min) @ Temperature.: 45.0 barg / x 90.0 C /-48ºC
Materials of Construction (Shell/Tubes): AC14 / 316L SS
Trim (Shell/Tubes): - / -
Insulation (type/thickness): HC / (SHEEL: 75 mm / CHANNEL: 75 mm)
REGEN. DESIGN (TUBE): D.P.: 11.0 barg / D.T.: 400/0 ºC



NOTES:

1. VALVES TO BE ACCESSIBLE AT GRADE.
2. NOT USED.
3. DELETED.
4. DELETED.
5. STEAM CONNECTION FOR DESSICANT DEACTIVATION.
6. DELETED.
7. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
8. COLD SIDE OUTLET VALVE TO BE TAGGED:
"DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST."
9. DELETED.
11. DELETED.
12. DELETED.
13. DELETED.
14. DELETED.
15. DELETED.
16. THREADED END VALVE.
17. TWO PHASES FLOW. POSSIBLE UNSTABLE FLOW.
18. ANALYZER LOCATED IN RACK EZ-AX-09 SEE DETAIL IN P&ID EZ-K-2955A.

HOLDS:

1. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	PSA	RAE
1	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
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Jubail, Kingdom of Saudi Arabia

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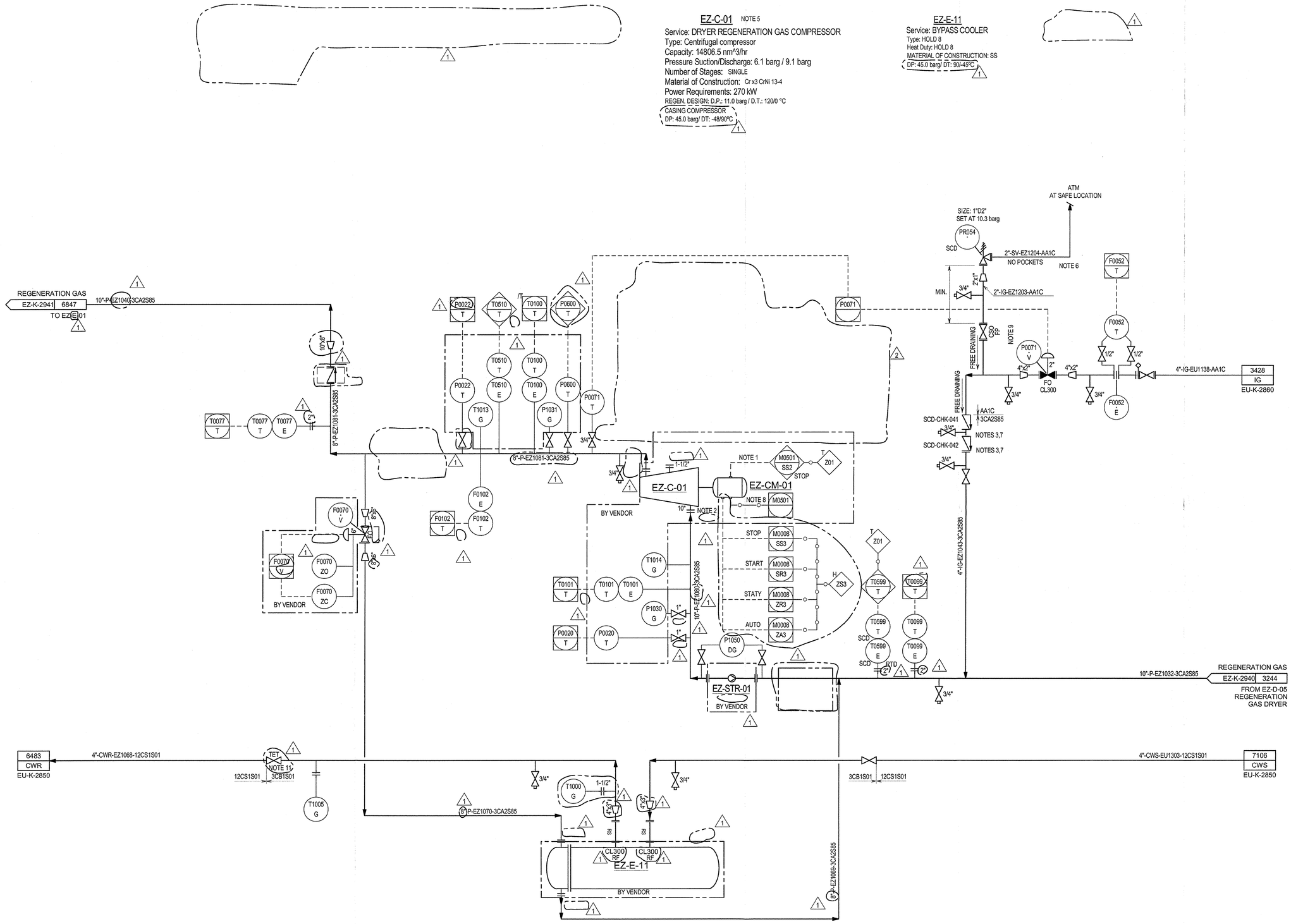
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
DRYER REGENERATION SYSTEM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING N0.	SHEET N0.	REVISION
-	EZ-K-2941	1 OF 1	2



NOTES:

1. TRIP COMPRESSOR ON HIGH MOTOR TEMPERATURE.
2. ALARM AND TRIP COMPRESSOR UPON SEAL FAILURE.
3. SAFETY CRITICAL CHECK VALVE FOR EZ-PR-054 SIZING.
4. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
5. TO BE MONITORED BY MACHINE PROTECTION AND MONITORING SYSTEM.
6. 3 /4" WEEP HOLE AT LOW POINT OF OUTLET PIPING.
7. DIFFERENT TYPE SAFETY CRITICAL CHECK VALVES TO BE INSTALLED.
8. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
9. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
10. DELETED.
11. COLD SIDE OUTLET VALVE TO BE TAGGED "DO NOT CLOSE UNLESS THE HOT SIDE HAS BEEN BLOCKED IN FIRST".

HOLDS:

4 DELETED.

8. BY VENDOR.

9 DELETED.

U. DELETED.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DBE	RAF
0	17/05/2013	ISSUED FOR CONSTRUCTION	MCG	DRS	RAF

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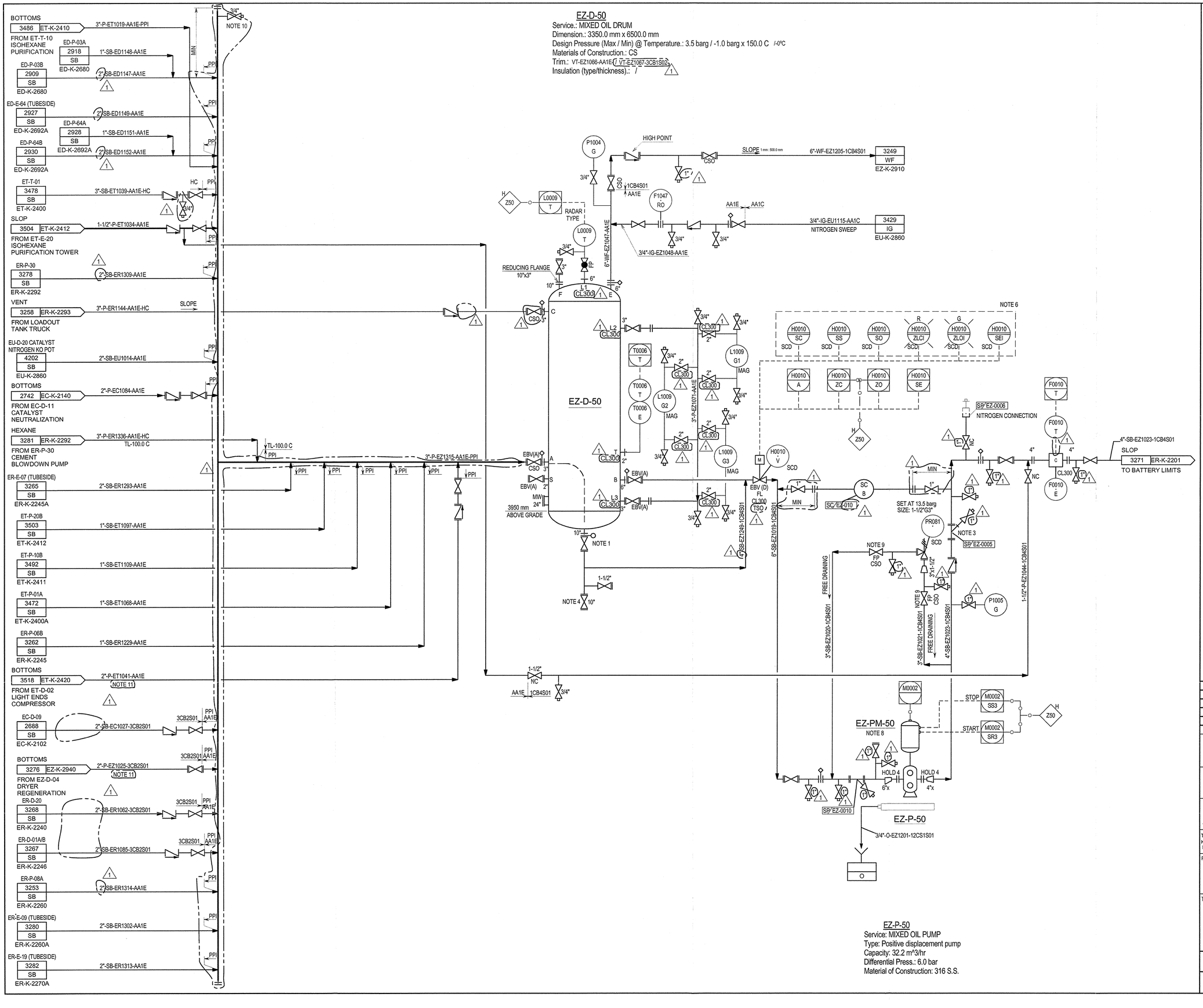
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEUS
DRYER REGENERATOR GAS COMPRESSOR

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2941A	1 OF 1	1



NOTES:

1. DELETED.
2. DELETED.
3. 40 MESH SCREEN.
4. PROVIDE ADEQUATE ELEVATION FOR DUMPING INTO A VACUUM TRUCK.
5. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
6. EBV LOCAL PANEL LOCATED MINIMUM 12 m AWAY FROM THE SOURCE OF LEAK.
7. DELETED.
8. MOTOR WITH START/STOP LOCAL PUSH BUTTON.
9. BLOCK VALVE SHALL BE INSTALLED WITH THE STEM ORIENTED AT OR BELOW THE HORIZONTAL.
10. 3/4" BLOCK VALVE CONNECTION EVERY 30 m. IN HEADER (ON TOP).
11. TWO PHASE FLOW. POSSIBLE UNSTABLE FLOW.

HOLDS:

4. SIZE TO BE CONFIRMED WITH FINAL VENDOR INFORMATION.

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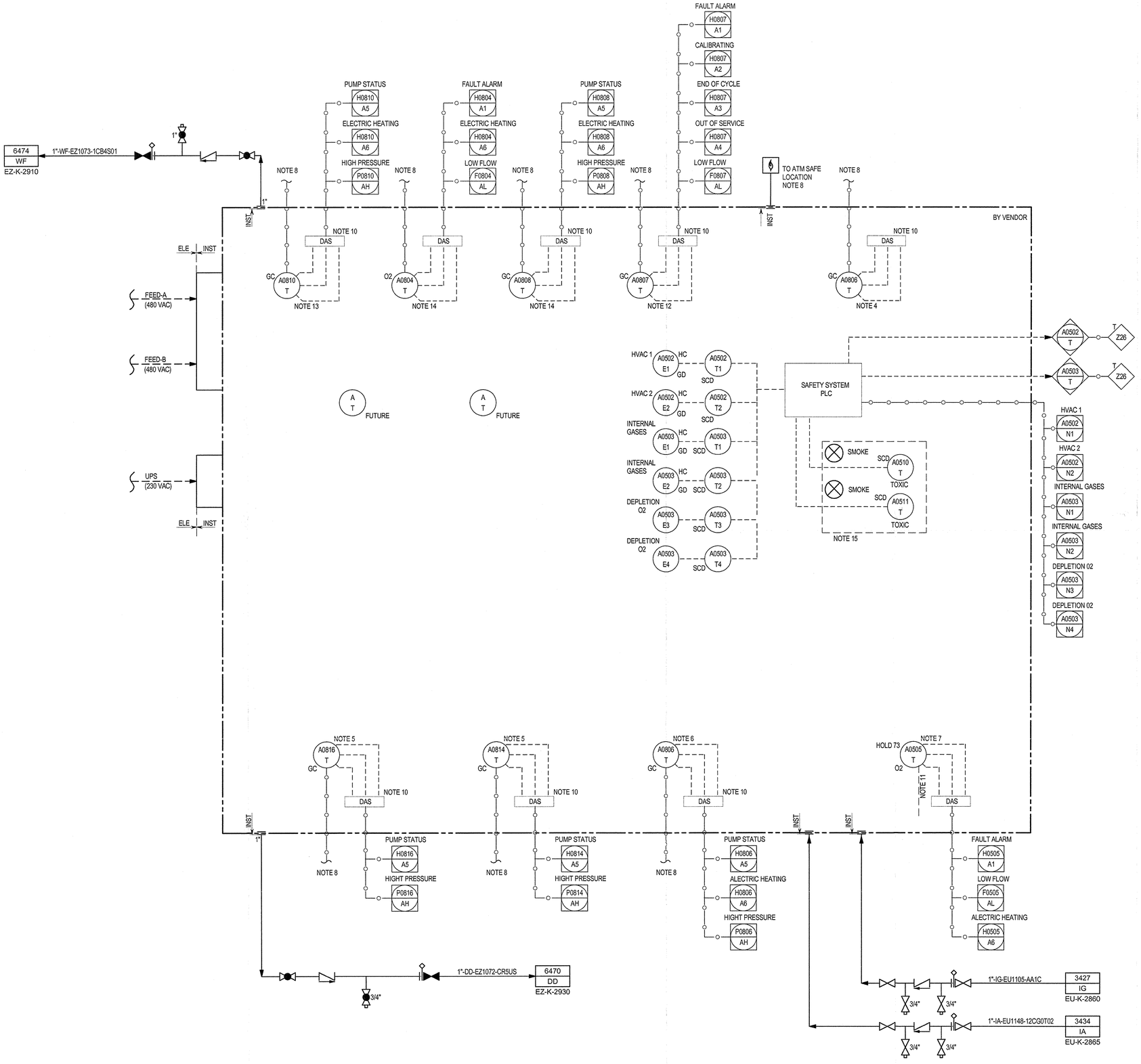
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
MIXED OIL DRUM

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2950	1 OF 1	1



NOTES:

1. DELETED.
2. DELETED
3. DELETED.
4. ANALYZER LOCATED IN P&ID ET-K-2411.
5. ANALYZER LOCATED IN P&ID ER-K-22246.
6. ANALYZER LOCATED IN P&ID EL-K-2320.
7. ANALYZER LOCATED IN P&ID ED-K-2692
8. FLAME ARRESTOR.
9. TYPICAL TO ALL G.C.
10. SAME DAS SIGNAL AS A0807T PLUS THESE SIGNALS HERE INDICATED.
11. O2 SIGNALS TO SIS IS INDICATED IN O2 P&ID.
12. ANALYZER LOCATED IN P&ID ET-K-2412.
13. ANALYZER LOCATED IN P&ID ET-K-2420.
14. ANALYZER LOCATED IN P&ID ET-K-2430.
15. F&G SYSTEM WIRED TO EPGM TIB F.A.C.P.

HOLDS:

16. DELETED.
73. PENDING TO DEFINE IF ANALYZER IS LOCATED EITHER IN SHELTER EZ-AS-01 OR RACK.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

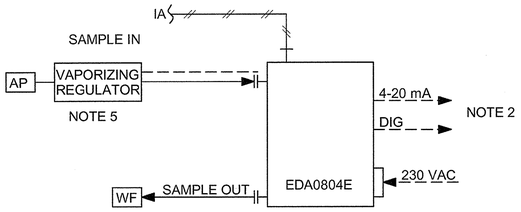
TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
ANALYZER SHELTER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2955	1 OF 1	1

RACK EZ-AX-01

MOISTURE ANALYZER

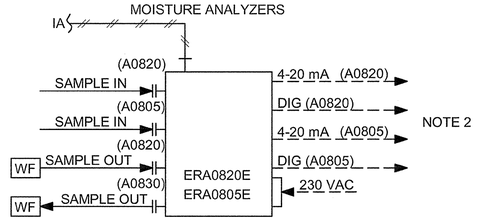


P&ID: ED-K-2640

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
EDA0804	EDA0804T	ANALYZER TRANSMITTER	P-AI
	EDH0804A1	FAULT ALARM	P-DI
	EDH0804A6	HEATER FAULT ALARM	P-DI
	EDH0804A8	VAPORIZER FAULT ALARM	P-DI
	EDF0804AL	FLOW ALARM LOW	P-DI

RACK EZ-AX-05

MOISTURE ANALYZERS

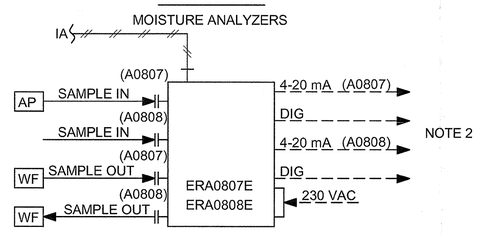


P&ID: ER-K-2201

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
ERA0820	ERA0820T	ANALYZER TRANSMITTER	P-AI
	ERH0820A1	FAULT ALARM	P-DI
	ERF0820AL	FLOW ALARM LOW	P-DI
ERA0805	ERA0805T	ANALYZER TRANSMITTER	P-AI
	ERH0805A1	FAULT ALARM	P-DI
	ERF0805AL	FLOW ALARM LOW	P-DI

RACK EZ-AX-03

MOISTURE ANALYZERS

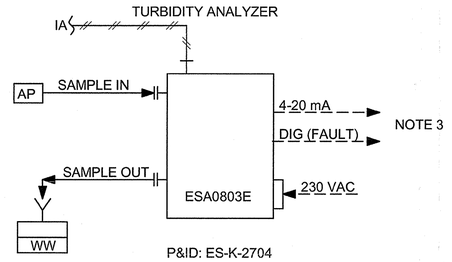


P&ID: ER-K-2250A

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
ERA0807	ERA0807T	ANALYZER TRANSMITTER	P-AI
	ERH0807A1	FAULT ALARM	P-DI
	ERF0807AL	FLOW ALARM LOW	P-DI

RACK EZ-AX-06

TURBIDITY ANALYZER

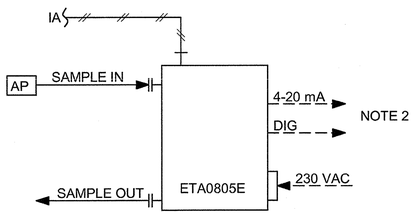


P&ID: ES-K-2704

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
ESA0803	ESA0803T	ANALYZER TRANSMITTER	D-AI
	ESH0803A6	HEATER FAULT ALARM	D-DI
	ESH0803A1	FAULT ALARM	D-DI
	ESF0803AL	FLOW ALARM LOW	D-DI

RACK EZ-AX-07

MOISTURE ANALYZER

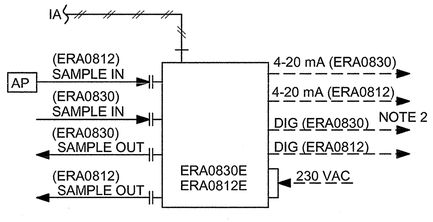


P&ID: ET-K-2400A

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
ETA0805	ETA0805T	ANALYZER TRANSMITTER	P-AI
	ETH0805A1	FAULT ALARM	P-DI
	ETF0805AL	FLOW ALARM LOW	P-DI

RACK EZ-AX-04

MOISTURE ANALYZER

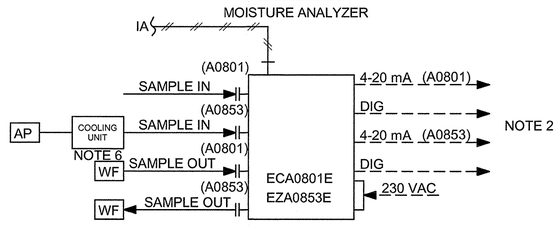


P&ID: ER-K-2246

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
ERA0812	ERA0812T	ANALYZER TRANSMITTER	P-AI
	ERH0812A1	FAULT ALARM	P-DI
	ERF0812AL	FLOW ALARM LOW	P-DI
ERA0830	ERA0830T	ANALYZER TRANSMITTER	P-AI
	ERH0830A1	FAULT ALARM	P-DI
	ERF0830AL	FLOW ALARM LOW	P-DI

RACK EZ-AX-09

MOISTURE ANALYZER

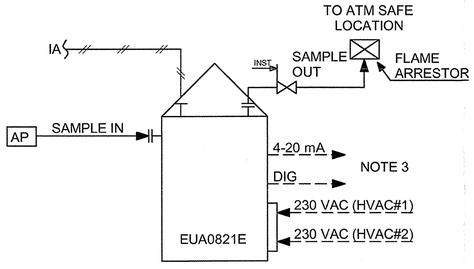


P&ID: EC-K-2102 (A0801T) / EZ-K-2941 (A0853T)

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE	LINE NUMBERS	
				CWS	CWR
ECA0801	ECA0801T	ANALYZER TRANSMITTER	P-AI	1"-CWS-EU1538-12CS1S01	1"-CWR-EZ1096-12CS1S01
	ECH0801A1	FAULT ALARM	P-DI		
	ECF0801AL	FLOW ALARM LOW	P-DI		
EZA0853	EZA0853T	ANALYZER TRANSMITTER	P-AI		
	EZH0853A1	FAULT ALARM	P-DI		
	EZH0853A6	HEATER FAULT ALARM	P-DI		
	EZF0853AL	FLOW ALARM LOW	P-DI		

CABINET EZ-AXC-10

COMBUSTIBLE GAS ANALYZER

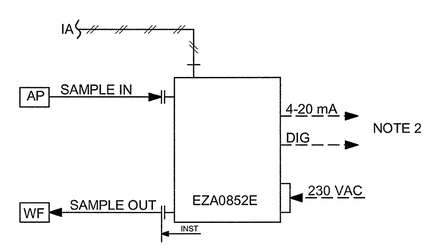


P&ID: EU-K-2845

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
EUA0821	EUA0821T	ANALYZER TRANSMITTER	D-AI
	EUH0821A1	FAULT ALARM	D-DI
	EUF0821AL	FLOW ALARM LOW	D-DI

RACK EZ-AX-08

MOISTURE ANALYZER

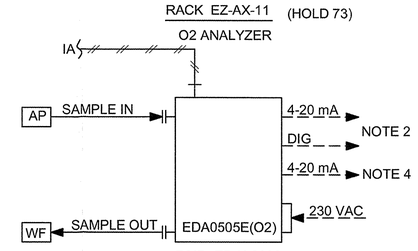


P&ID: EZ-K-2940

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
EZA0852	EZA0852T	ANALYZER TRANSMITTER	P-AI
	EZH0852A1	FAULT ALARM	P-DI
	EZH0852A6	HEATER FAULT ALARM	P-DI
	EZF0852AL	FLOW ALARM LOW	P-DI

RACK EZ-AX-11 (HOLD 73)

O2 ANALYZER



P&ID: ED-K-2692

ANALYZER LOOP	TAG SIGNAL	DESCRIPTION	I/O TYPE
EDA0505	EDA0505T	ANALYZER TRANSMITTER	S-AI
	EDH0505A1	FAULT ALARM	P-DI
	EDF0505AL	FLOW ALARM LOW	P-DI
	ETH0505A2	HEATER FAULT ALARM	P-DI
	EDA0505TI	ANALYZER TRANSMITTER	P-AI

NOTES:

2. SIGNAL WIRED TO DCS LOCATED IN EZ-AS-01
3. SIGNAL WIRED TO DCS (EPDM RIB).
4. SIGNAL WIRED TO SIS.
5. INSTALL THE VAPORIZING REGULATOR AS CLOSE IS POSSIBLE TO SAMPLE POINT.
6. INSTALL THE COOLING UNIT AS CLOSER IS POSIBLE TO SAMPLE POINT.

HOLDS:

73. PENDING TO DEFINE IF ANALYZER IS LOCATED EITHER IN SHELTER EZ-AS-01 OR RACK.

REDRAWN

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	ISSUE FOR CONSTRUCTION	MCG	PSA	CTR
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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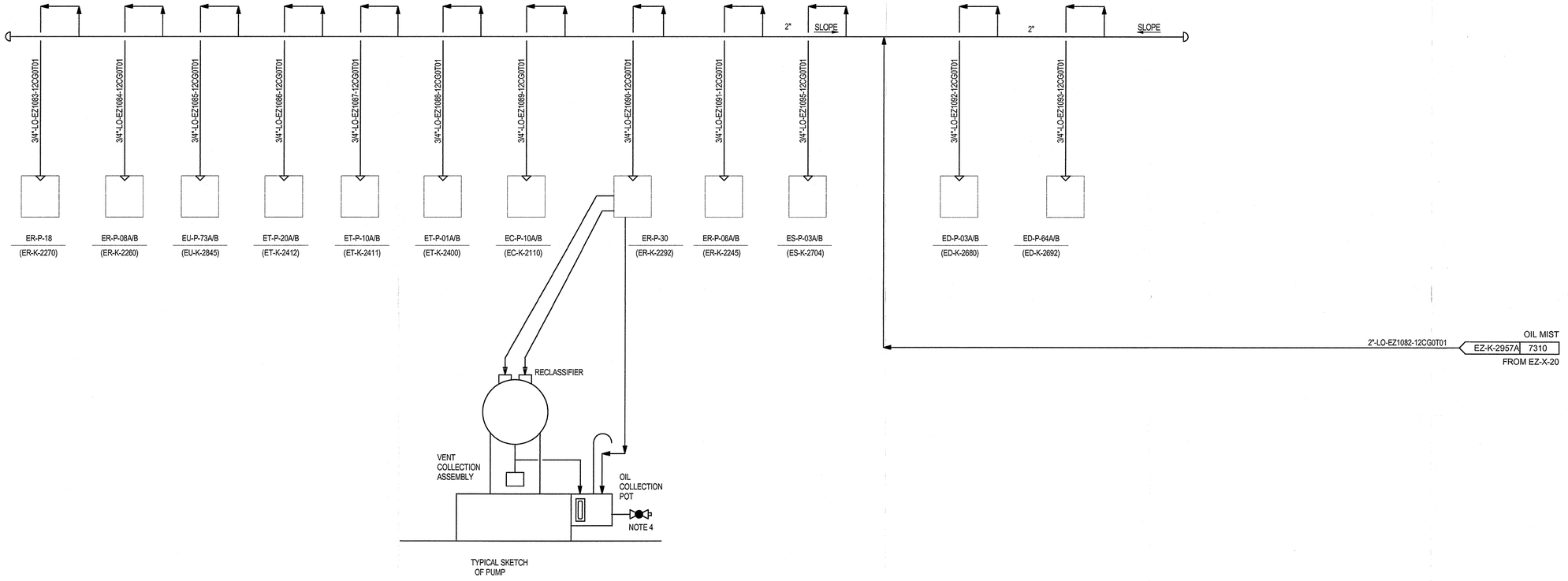
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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
EPDM UNIT
FIELD ANALYZER RACKS/CABINET

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2955A	1 OF 1	1



TYPICAL SKETCH
OF PUMP

NOTES:

1. AUTOMATED DRAIN LEG SHALL BE CONSIDERED IF HEADER SLOPING CANNOT BE KEPT BY HEADER ARRANGEMENT.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
3. BOTH PUMP AND MOTOR ARE SUPPLIED OIL MIST IF POSSIBLE.
4. PROVIDE ADEQUATE DESIGN FOR DRAINING OIL COLLECTION POTS. DRAIN SHALL BE ACCESIBLE.

HOLDS:

2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
1	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
OIL MIST DISTRIBUTION

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2957	1 OF 1	2

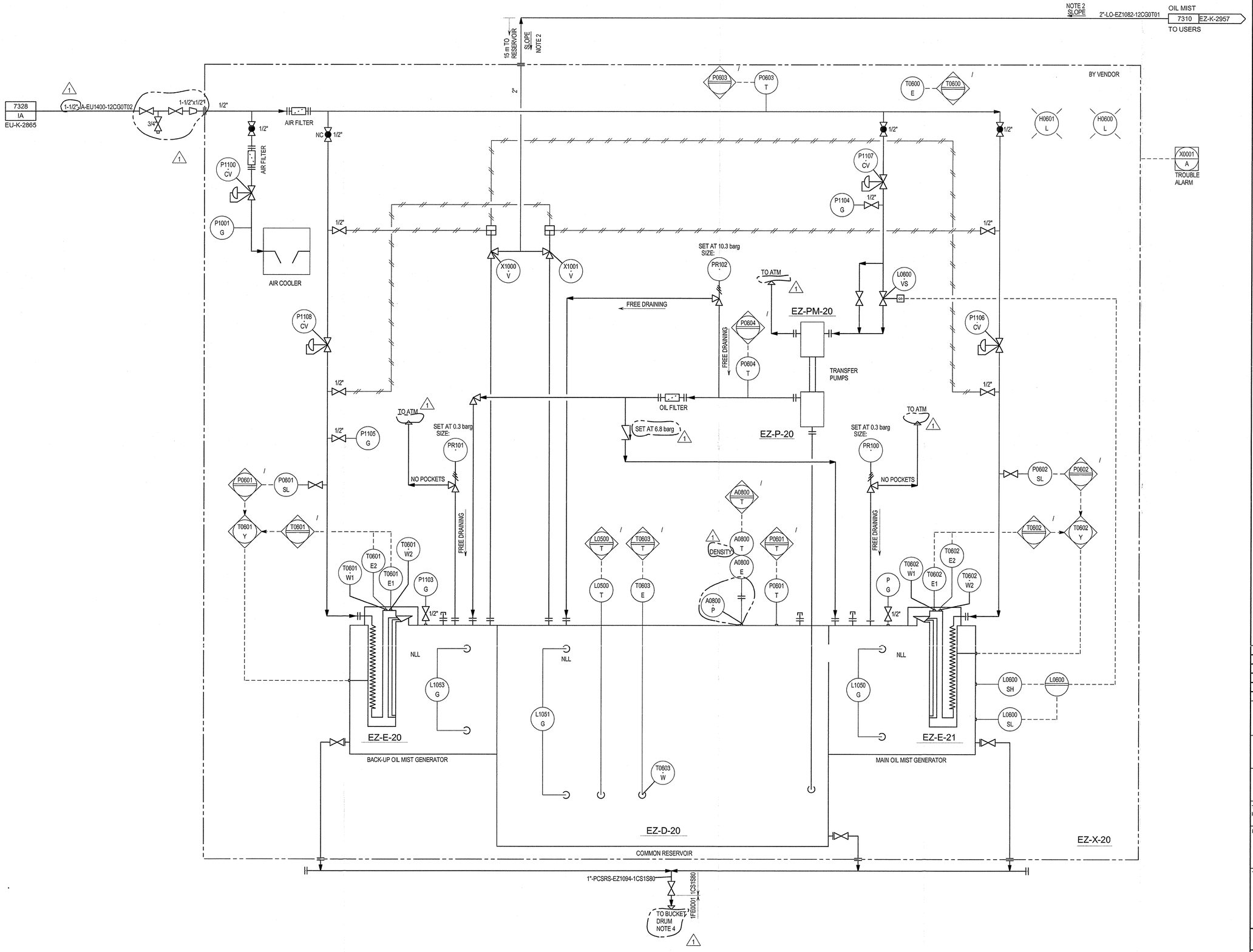
EZ-D-20
Service: OIL MIST GENERATING DRUM

EZ-E-20
Service: OIL MIST GENERATING HEATER
Type:
Heat Duty:
Materials of Construction:

EZ-E-21
Service: OIL MIST GENERATING HEATER
Type:
Heat Duty:
Materials of Construction:

EZ-P-20
Service: OIL MIST GENERATING PUMP
Type: Positive displacement pump
Capacity:
Differential Press.:
Material of Construction:

EZ-X-20
Service: OIL MIST GENERATOR
RATE CAPACITY: 96 Nm3/hr
MATERIALS OF CONSTRUCTION: SS



NOTES:

1. SLOPE IS 0.0083.
2. SLOPE IS 1:240.
3. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS 00-K-2000 THROUGH 00-K-2015. ALL INSTRUMENTS TAGS ARE PREFIXED WITH "EZ" UNLESS OTHERWISE STATED.
4. MINIMUM ELEVATION OF BUCKET DRUM SHALL BE 300 mm.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	DRF	RAF
0	29/07/2013	ISSUED FOR CONSTRUCTION	MCG	DRF	RAF

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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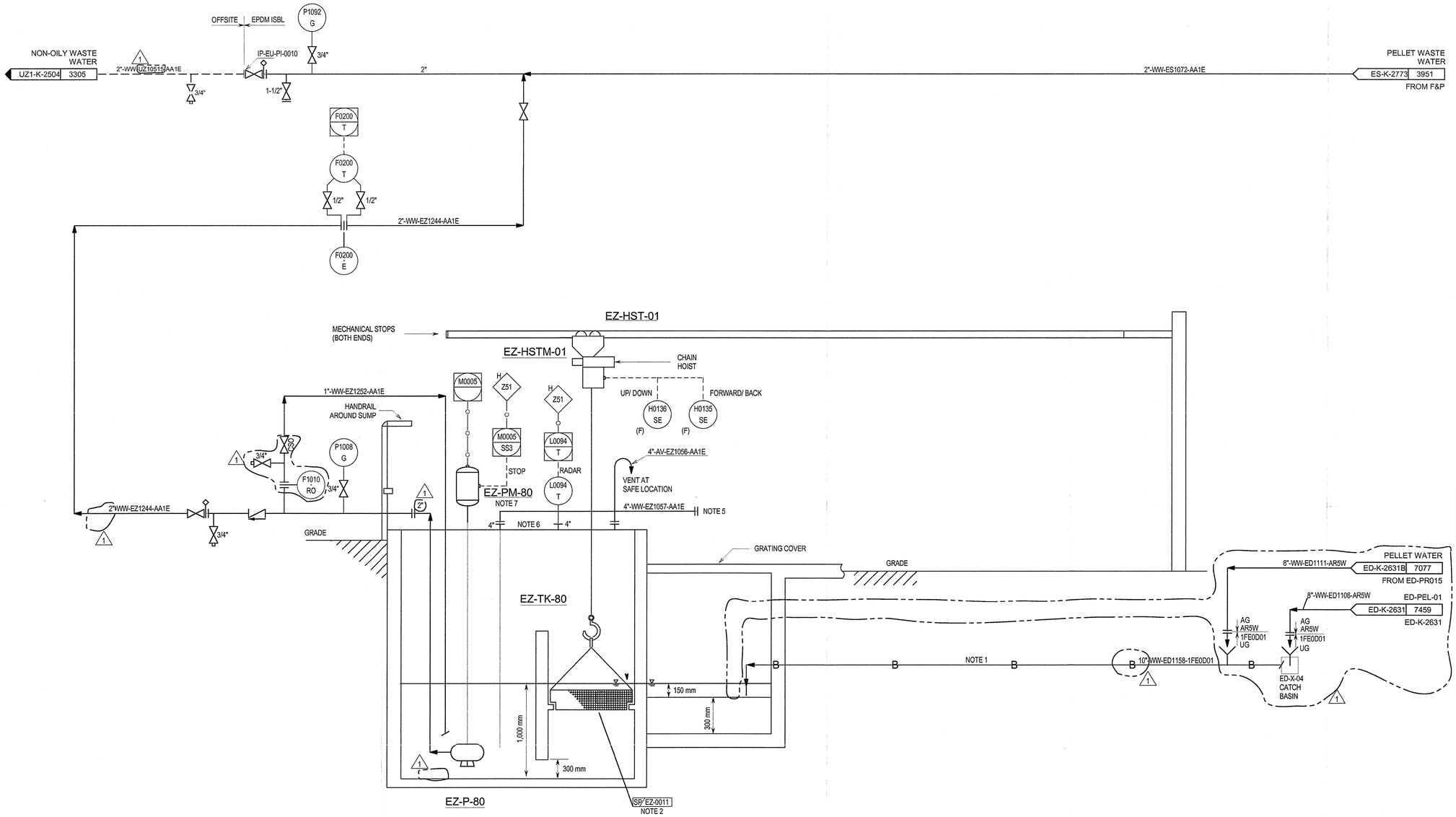
PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
OIL MIST PACKAGE

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1
A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2957A	1 OF 1	1

EZ-TK-80
Service: POLY NON-OILY PROCESS WASTE WATER SUMP
SIZE 2250 mm x 2500 mm x 2360 mm (1)

EZ-HST-01
Service: HOIST FOR EZ-TK-80 WIRE MESH BASKET
Capacity: 1 TON
Driver: 2 kW



EZ-P-80
Service: POLY NON-OILY PROCESS WASTE WATER SUMP PUMP
Type: Sump pump
Capacity: 10.0 m^3/hr (1)
Differential Press.: 2.9 bar
Material of Construction: 316 SS (1)

NOTES:

1. DRAINS ARE CONNECTED TO COVERED TRENCH.
2. REMOVABLE BASKET (900 MML X 900 MMW X 300 MMH) WITH 25 MESH SCREEN.
3. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
4. NOT USED.
5. VACUUM TRUCK CONNECTION.
6. TOP TO BE REMOVABLE PLATE.
7. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

3. DELETED. (1)
4. DELETED. (1)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	BAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	28/08/2011	ISSUE FOR HAZOP	SWD	SNYM	NIKKO

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Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
POLY PELLET WATER SEWER

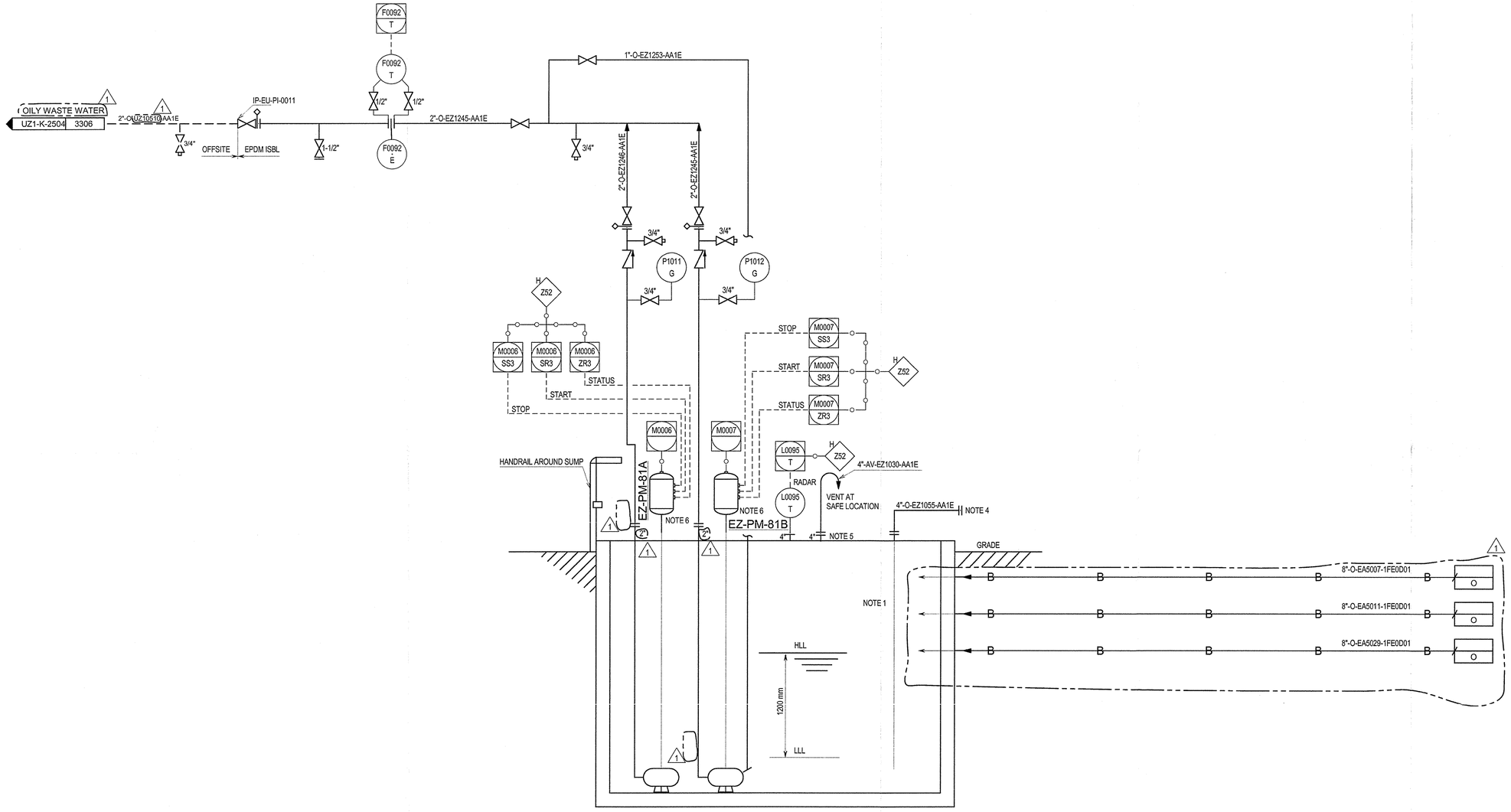
SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2975	1 OF 1	1

EZ-TK-81

Service: OILY PROCESS WASTE WATER SUMP

SIZE: 3000 mm x 5600 mm x 4170 mm (1)



EZ-P-81A EZ-P-81B EZ-TK-81

EZ-P-81A/ B

Service: OILY PROCESS WASTE WATER SUMP PUMPS

Type: Sump pump (1)

Capacity: 10.0 m^3/hr

Differential Press.: 4.6 bar. (1)

Material of Construction: 316 SS

NOTES:

1. SUMP TO BE VACUUMED OUT TO REMOVE RUBBER DROPPINGS.
2. ALL INSTRUMENT TAGS ARE PREFIXED WITH EZ UNLESS OTHERWISE STATED.
3. NOT USED.
4. VACUUM TRUCK CONNECTION.
5. TOP TO BE REMOVABLE PLATE.
6. MOTOR WITH START/STOP LOCAL PUSH BUTTON.

HOLDS:

3. DELETED. (1)
4. DELETED. (1)

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
1	13/09/2013	FINAL ISSUE	MCG	PSA	RAF
0	11/04/2013	ISSUED FOR CONSTRUCTION	MCG	PSA	CTR
C1A	24/01/2013	ISSUED FOR DESIGN FREEZE	MCG	PSA	CTR
C1	30/10/2012	ISSUE FOR DESIGN	MCG	PSA	CTR
C0	26/08/2011	ISSUE FOR HAZOP	SWD	SNYM	MKKO

Saudi Basic Industries Corporation
Engineering and Project Management
Jubail, Kingdom of Saudi Arabia

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PROJECT:
Saudi Elastomers Project (SEP)
EPDM FACILITIES

TITLE
PIPING AND INSTRUMENT DIAGRAM
MISCELLANEOUS
OILY WATER SEWER

SCALE	AREA	PROJECT NUMBER	SIZE
-	-	02200	A1

A.I.D	DRAWING NO.	SHEET NO.	REVISION
-	EZ-K-2976	1 OF 1	1